



**United States
Department of
Agriculture**

Forest Service

Pacific
Southwest
Region

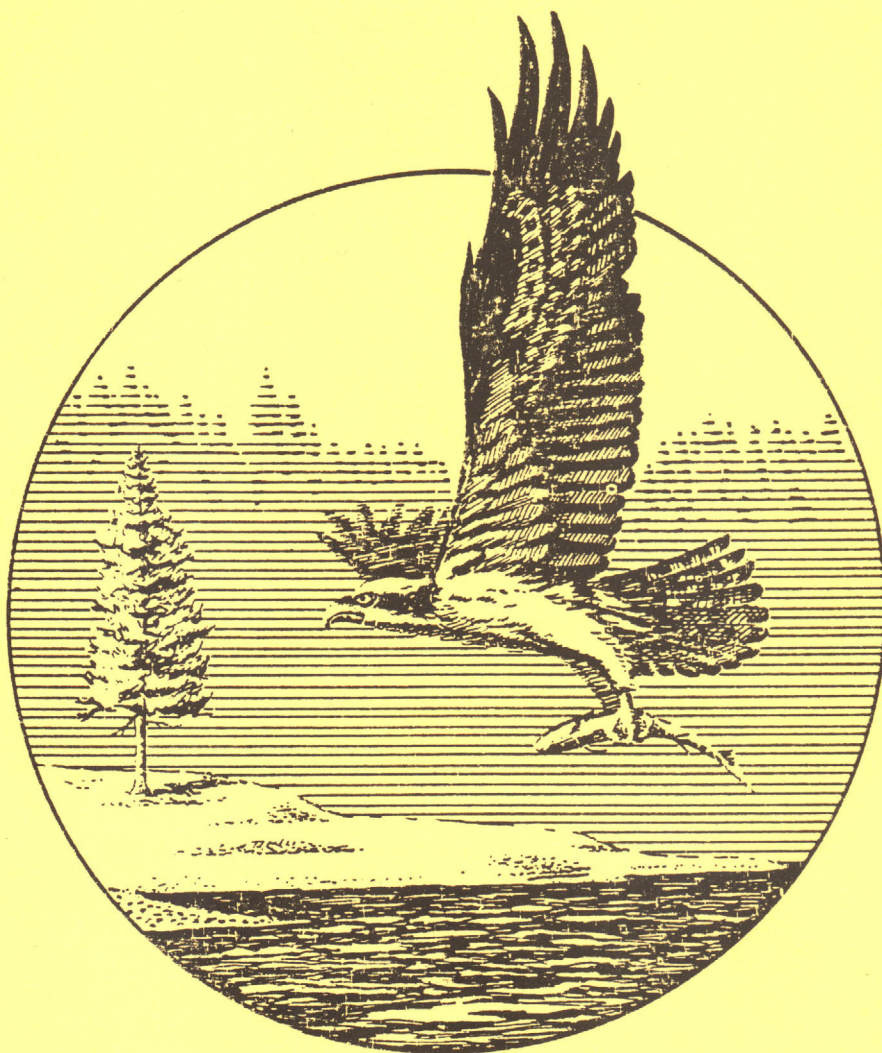
In cooperation with:

U.S.D.A. Soil
Conservation Service

Regents of the
University of California
(Agricultural Experiment
Station)

Soil Survey

Klamath National Forest Area California



How To Use This Soil Survey

General Soil Map

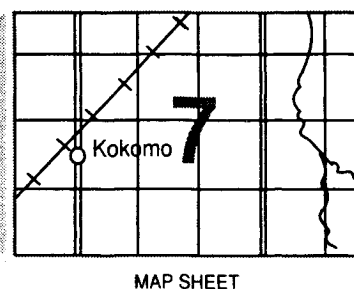
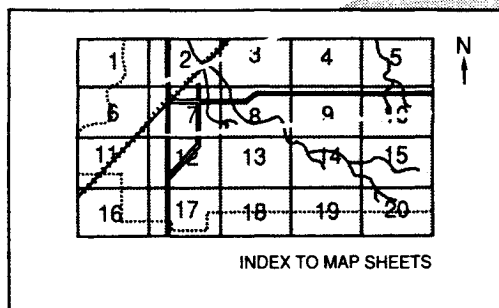
The general soil map, which is the small scale map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

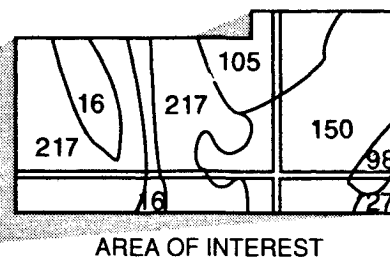
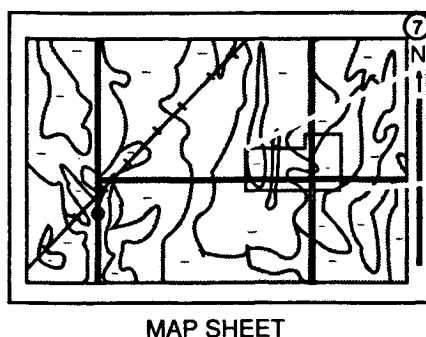
Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.



Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Index to Map Units** (see Contents), which lists the map units by symbol and name and shows the page where each map unit is described.



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

The **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.

Klamath National Forest Area, California

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture, other federal agencies and state agencies including the Agricultural Experiment Stations. The fieldwork and technical quality control for this survey were conducted by the Forest Service. The correlation of the soils was conducted by the Soil Conservation Service in consultation with the Forest Service. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status or age.

Major fieldwork for this soil survey was performed in the period 1978-1981. Soil names and descriptions were approved in 1982. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1982. This survey was made cooperatively by the Forest Service and the Soil Conservation Service. The soil survey area consists of the Klamath National Forest which occurs in Siskiyou County, California and Jackson County, Oregon.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

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Foreward

The Soil Survey of the Klamath National Forest Area, in parts of Siskiyou County, California and Jackson County, Oregon, was designed to facilitate broad forestwide resource management planning and to increase the knowledge of our environment. It contains predictions of soil productivity and behavior for selected land uses. Also highlighted are limitations or hazards to land uses that are inherent in the soil.

This soil survey has been prepared primarily for forest resource planners and managers. It is useful for preliminary project planning, for identifying general soil management considerations and for evaluation of more intensive soil survey needs. This survey can be used for detailed resource management planning and project level planning and design only after field verification.

Great differences in soil properties can occur within short distances. Soils may be shallow to bedrock and incapable of producing commercial timber. They may be seasonally wet or subject to flooding. A low available water capacity makes a soil poorly suited to reforestation. A high water table makes a soil suitable for use as summer range.

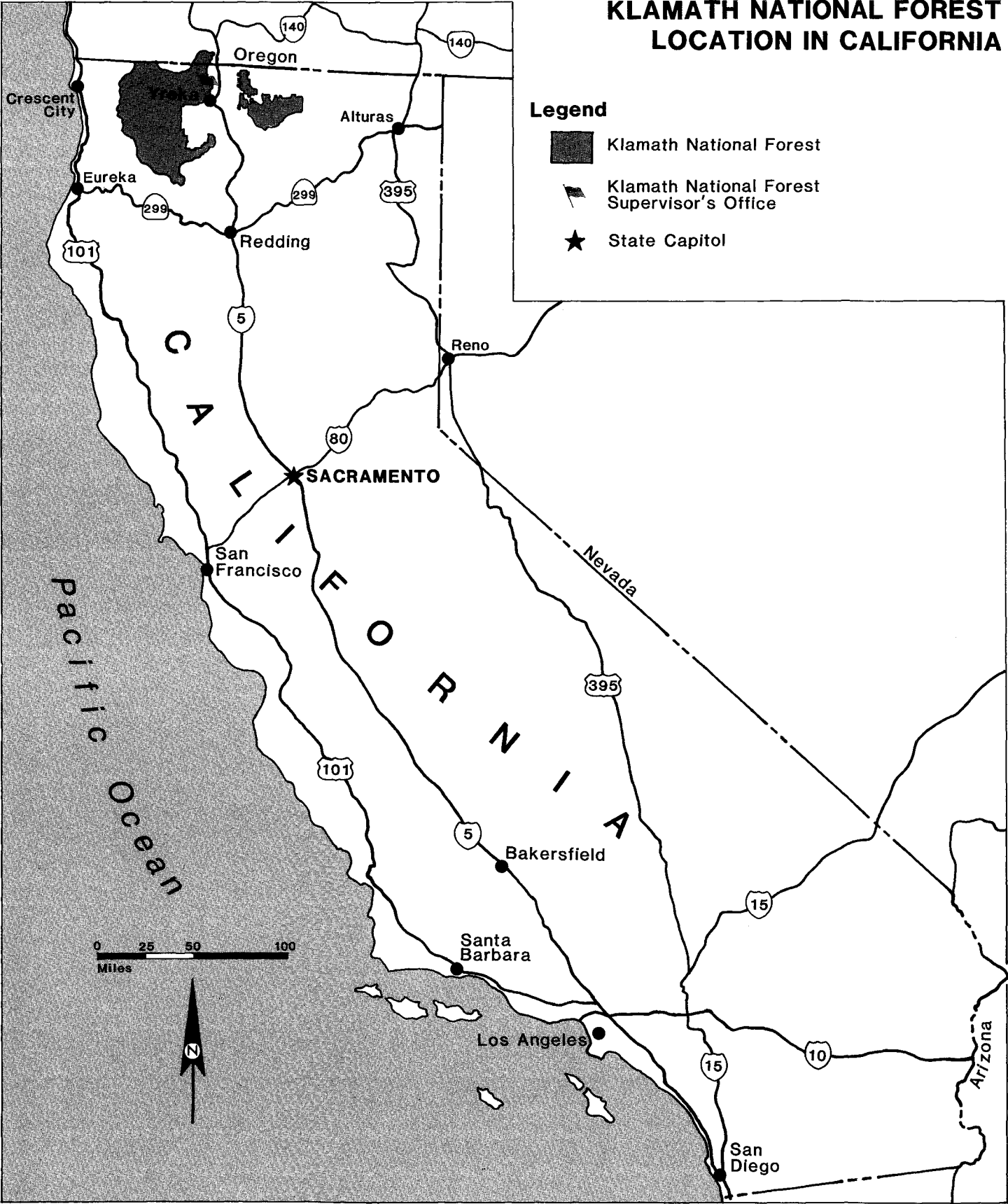
These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil map unit is shown on detailed soil maps. Each soil in the survey area is described and information on specific uses is given for each soil.

This soil survey can be useful in the conservation, improvement and productive use of soil, water and other resources.



BARBARA HOLDER
Forest Supervisor
Klamath National Forest

KLAMATH NATIONAL FOREST LOCATION IN CALIFORNIA



Soil Survey of Klamath National Forest Area, California

Parts of Siskiyou County, California and Jackson County, Oregon

By Cynthia M. Foster and Greg K. Lang

Soils surveyed by Earl Alexander, Larry Bryant, Cynthia Foster, Ernest Genter, Robert Graham and Greg Lang, Forest Service

General Nature of the Survey Area

Most of the Klamath National Forest is in survey area 702 in northcentral California. There are also some small parcels of Forest Service land outside of the survey area which were mapped by the Soil Conservation Service in former soil surveys. Survey area 702 is in Siskiyou County California and Jackson County Oregon. The approximate acreage of each County and State in the survey area is:

Siskiyou County, California	1,733,545
Jackson County, Oregon	27,520

The total size of the survey area is 1,761,065 acres. Of the total, about 236,160 acres are privately owned and 560 acres are lake bodies greater than 40 acres in size in Siskiyou County, California. In Jackson County, Oregon, about 3,200 acres are in private ownership. The Forest consists of six Ranger Districts: Goosenest, Happy Camp, Oak Knoll, Salmon River, Scott River and Ukonom. Forest headquarters is in Yreka, California.

Climate

The climate of the Klamath National Forest is mediterranean, with cool moist winters and warm dry summers. Average January temperature on the Forest ranges from about 22 to 44° F., and average July temperature ranges from about 55 to 75° F. (9,19).

Precipitation ranges from about 9 to 40 inches on the Goosenest Ranger District to the east and 80 to over 100 inches on the western most portion of the Happy Camp Ranger District. Roughly 80 percent of the precipitation falls in the six month period from

October 1 to April 1. Most of the precipitation is from widespread storms of several days duration and of relatively moderate intensities. Snow occurs in moderate amounts at elevations of 2,000 feet and up, but only above about 4,000 feet does snow remain on the ground for long periods (9,19).

Geomorphology

The survey area covers portions of the Klamath Mountains Physiographic Province in the western portion of the Forest, and the Cascade Range Physiographic Province on the eastern portion of the Forest. The Klamath Mountains portion is typically steep to very steep, highly dissected uplands ranging from 500 to 8,000 feet in elevation. There has been much folding, faulting, shearing and uplifting of the granitic, metamorphic and ultramafic rocks. The Cascade portion is dominated by gently undulating, rolling slopes occasionally broken by steep volcanic cinder cones or fault scarps. Young volcanic lava flows and cinder cones overlay older faulted and tilted volcanic materials. Elevations range from 2,700 to 8,500 feet (3).

Most of the Forest's lakes and streams are located on the west side (west of Interstate Highway 5). Streams of all sizes occur in the deep, steep canyons, with lakes primarily in the high mountains. The Shasta River, Salmon River and Scott River drain into the Klamath River, which drains the entire area and yields approximately 94 percent of the water produced from the Forest.

Four smaller streams occur on the east side of the Forest (east of Interstate Highway 5). The Little Shasta River and Shovel Creek originate on Ball Mountain and flow into the Klamath River. Butte Creek and Antelope

Creek originate in the southwest side of the province and drain into the enclosed Butte Valley basin.

Bedrock within the Cascade Range Province consists of a wide variety of lava flows, mainly basalt and andesite, along with pyroclastic rocks such as tuffs and breccias which are associated with explosive eruptions. The rocks range in age from Eocene to recent. Lakebed deposits including fresh water diatomite occur locally along with alluvial deposits and glacial moraines and outwash (3,6).

The Klamath Mountains Province is divided into four major bedrock units from east to west: the Eastern Klamath Belt, the Central Metamorphic Belt, the Western Paleozoic and Triassic Belt and the Western Jurassic Belt. A wide variety of metamorphic rocks occur within these belts. Schists, marble, quartzite, greenstone (metamorphosed volcanic rock) and chert are common. In many areas, the metamorphic rock has been intruded by large bodies of granitic rock and tabular bodies of ultrabasic rock (peridotite). The peridotite is often altered almost completely to serpentinite. These rock units range in age from the Ordovician to the Jurassic periods. A minor amount of Cretaceous sedimentary rock occurs in the vicinity of Hornbrook. Quaternary deposits consist of glacial moraine and outwash, elevated stream terraces, recent alluvium and landslide deposits (3,6).

Wildlife

A great diversity of wildlife species inhabit the Klamath National Forest. A number of sensitive and endangered species are found here, along with such harvest species as the black-tailed deer, mule deer, black bear, gray fox, raccoon, gray squirrel, jackrabbit and quail. Some species, such as the spotted owl, goshawk and pileated woodpecker depend upon old-growth forest areas for their habitat (15).

Forest Uses

Timber production is the dominant land use on the Forest. Watershed, fisheries and wildlife values are important resources for land use. Recreation, including hunting, fishing, hiking and offroad vehicle use is also important. Range use is of significant extent primarily on the Goosenest Ranger District.

Vegetation

Eight major vegetation types (4) are found on the Klamath National Forest. The following are brief descriptions of each type and the corresponding CALVEG Series designations (18):

YELLOW PINE - SHRUB FOREST [8]. This forest type is dominated by pine forest with bitterbrush. It occurs mainly on the east side of the Forest in the Cascades (CALVEG Ponderosa Pine, Bitterbrush - Rabbitbrush);

KLAMATH MONTANE FOREST WITH DOUGLAS FIR [12]. This forest is dominated by white fir and red fir, with Douglas-fir, incense cedar, mountain hemlock and ponderosa pine. It occurs mainly on the far west side of the Forest in the Klamath Mountains. (CALVEG Douglas Fir - Tanoak - Madrone; Douglas-Fir - Pine - Madrone; Mixed Conifer - Fir);

KLAMATH MONTANE FOREST WITH YELLOW PINE [13]. This forest type is dominated by Douglas fir, with ponderosa pine, sugar pine, white fir and incense cedar. It occurs mainly on the west side of the Forest in the Klamath Mountains (CALVEG Mixed Conifer - Pine; Jeffrey Pine);

SIERRA MONTANE FOREST [15]. This forest type is dominated by white fir and pine timber. It occurs mainly on the east side of the Forest in the Cascade Mountains (CALVEG Mixed Conifer - Fir; Mixed Conifer - Pine; White Fir; Canyon Live Oak; Black Oak);

UPPER MONTANE - SUBALPINE FOREST [17]. This forest type is dominated by red fir and pine. It occurs at higher elevations on the east side of the Forest in the Cascade Mountains (CALVEG Lodgepole Pine; Mountain Hemlock);

OREGON OAK FOREST [20]. This forest type is dominated by oak and other hardwoods with brush understory. The minor amount of chaparral on the Forest is included in this type. It occurs mainly on the east side of the Klamath Mountains (CALVEG Oregon White Oak);

MIXED EVERGREEN FOREST WITH CHINQUAPIN [21]. This forest type is dominated by dense evergreen forest composed of madrone, Douglas-fir, canyon live oak and chinquapin. It occurs primarily on the west side of the Forest in the Klamath Mountains (CALVEG Douglas-fir - Pine - Madrone; Douglas-fir; Tanoak - Madrone; Canyon live oak; Oregon white oak; Madrone - Black oak; Bush chinquapin);

SAGEBRUSH STEP [31]. This shrub type is dominated by sagebrush and rabbitbrush with some juniper. It occurs mainly on the east side of the Forest in the Cascades (CALVEG Bitterbrush - Rabbitbrush).

How This Survey Was Made

This Order 3 soil survey has followed the directives and guidelines in the Forest Service Manual and Handbooks. It has also followed the concepts, procedures and guidelines of the National Cooperative Soil Survey as specified in the *Soil Survey Manual* (12), the *National Soils Handbook* (14), and the soil classification system as stated in *Soil Taxonomy* (13).

Soil Scientists begin the inventory by collecting, studying and correlating all the existing data and information concerning the survey area (Klamath National Forest) that is related to soil genesis and morphology. This includes lithological, geomorphological, topographical, elevational, climatic, vegetative and existing soil survey data both within and adjoining the survey area.

This data and information was assimilated and transferred to a single base map of suitable scale and accuracy forming the beginning soil map unit delineations or a schematic map. With the schematic map and aerial photo field sheets (stereo-pair coverage) in hand, the soil scientist made a reconnaissance study of the survey area. At this time, the delineations on the schematic map were checked for accuracy of content and location. The aerial photos were studied stereoscopically and the photo images were compared to the conditions found on the ground to insure that later recognition by photo interpretation would be credible. Lithologic, geomorphic, soil and vegetative characteristics were recognized and recorded in field notes, on the schematic map and on the aerial photo field sheets.

Using the augmented and corrected schematic map, field notes and an understanding of how the photo images relate to actual conditions on the ground, the soil scientist delineated map units on the aerial photographs. The map units corresponded to segments of the landscape having similar landform, vegetative cover and soils as determined by a knowledge of ground conditions and by stereoscopic aerial photo interpretation. These aerial photos with the delineated map units and delineation symbols became the exploratory or preliminary soils map.

With the aerial photo (exploratory soils maps) and a field stereoscope in hand, the soil scientist examined on the ground as many delineations of each map unit as was feasibly possible, considering the access and time allowed to complete the survey. In this way, each different map unit was examined, studied and described by aerial photo interpretations and on-the-ground investigation. However, because of the design of the survey, Order 3 in intensity, and the time allotted for its completion, every delineation of each different map unit was not visited

and examined on the ground. Those delineations with no easy access were rarely visited other than by aerial photo interpretation. In this way, possibly one-third to one-half of the delineations on the field sheets and maps would not have been entered and examined by an on-the-ground investigation. *This is one of the main aspects of this survey that limits its reliability. It is one reason that the survey is not suitable for project planning without field verification.*

As each map unit was visited and examined, individual soils were recognized, studied, described, classified and enough data was collected to furnish the information needed to make interpretations and predictions concerning the use and management of each soil. *However, the exact location of each soil was not delineated.* The map units usually consist of a group of soils that occupy a particular portion of the landscape which has been delineated on the aerial photo field sheets. Depending on the area location and extent of the individual soils that are components of the delineated map unit, a map unit is called an association or complex of soil components. The soil scientist makes a field and aerial photo examination to estimate the soil component percentage composition for each map unit. These map units *do not* necessarily consist of similar soils. They consist of geographically associated soils that may be, and usually are, quite different in their characteristics and their suitability for use and management. *These are other aspects of the survey that limit its reliability and make it not suitable for project planning without field verification.*

This field examination and study, with the associated correction and refinement of the aerial photo field sheets, produces the Order 3 intensity soil maps called for in this system of survey.

The interpretations and predictions concerning use and management found in this report are based on the soil scientist's knowledge and understanding of the conditions recognized and measured in the time allotted to this inventory. By classifying the soils, the soil scientist can also, with acceptable reliability, bring information concerning use and management of a particular soil from other survey areas where this same soil occurs and has been recognized and studied. Because of the time allotted for the completion of this survey, these use and management interpretations and predictions should be considered as first or second approximations due to the relatively few examinations and measurements that have been made. *This is still another aspect of the survey that limits its reliability and makes it not suitable for project planning without field verification.*

Despite the cautions that have been made in the above paragraphs concerning the use of this survey information

for project level planning, it is adequate and reliable for its intended and designed purpose: a base for a Forest-

wide system of land management planning.

General Soil Map Units

The general soil map shows map units which consist of many individual soils. Each map unit contains soils with similar parent rock material and similar soil temperature regimes. A map unit typically is made up of one or more soils of major extent and several soils of minor extent. Map units are named for the major soils occurring in the unit. The soils in one unit can occur in other units. The soils are classified at the family level, or at a higher taxonomic level.

The map furnishes a broad perspective of the soils in the survey area. It provides a basis for comparing the potential of large areas for general kinds of land use. General areas which are capable of timber production or spring-summer range can be identified on the map.

Likewise, general areas of soils having properties that are distinctly unfavorable for certain land uses can be located.

Because of the generalization of map units and the small scale of the map, the location of specific soils are not shown. The map and map unit information is not suitable for Forest or project level land management planning. They give a very general overview of soil conditions and are suitable for State or Regional planning.

Explanation of the General Soil Map Units

All map units used were greater than 6,000 acres in extent. Component map units (M.U.'s) are listed in order of dominance.

TABLE 2. - Map Unit Descriptions and Management Interpretations

Unit	Classification	% Composition	Family
Young Soils Formed From Pyroclastic Material			
1	Dystric Xerorthents, ashy-skeletal, frigid	45	Avis
	Dystric Xeropsamments, ashy, frigid	40	Oosen
	Andic Xerumbrepts, Ultic Haploxeralfs,	15	
	Rock outcrop M.U.'s: 103, 169		
2	Typic Xerorthents, loamy-skeletal, mixed, nonacid, frigid, pumice overburden phase	55	Belzar, Pumice Overburden
	Ultic Haploxeralfs, fine-loamy, mixed, frigid, pumice overburden phase	25	Wintoner, Pumice Overburden
	Dystric Xerorthents, Ultic Haploxeralfs, Rock outcrop	20	
	M.U.'s: 104, 105, 173		
Residual Soils Formed From Volcanic Flow Material			
1	Aridic Argixerolls, clayey-skeletal, montmoril- lonitic, mesic	55	Ruclick
	Lithic Argixerolls, clayey, montmorillonitic, mesic	20	Deven
	Aridic Argixerolls, fine-loamy, mixed, mesic	15	Cowiche
	Rock outcrop, Typic Argixerolls, Cumulic Haploxerolls	10	
	M.U.'s: 177, 178, 179, 195		

Unit	Classification	% Composition	Family
2	Mollic Haploxeralfs, fine-loamy, mixed, frigid	30	Neuske
	Ultic Argixerolls, fine-loamy, mixed, frigid	25	Trojan
	Mollic Haploxeralfs, loamy-skeletal, mixed, frigid	20	Etchen
	Pachic Argixerolls, Ultic Haploxerolls, Durixeralfs	25	
	M.U.'s: 126, 167, 192, 194		
3	Ultic Haploxeralfs, loamy-skeletal, mixed, frigid	65	Inville
	Ultic Haploxeralfs, fine-loamy, mixed, frigid	20	Wintoner
	Dystic Xerochrepts, Mollic Haploxeralfs, Rock outcrop	15	
	M.U.'s: 145, 146		
4	Pachic Ultic Argixerolls, fine-loamy, mixed, frigid	40	De Masters
	Pachic Ultic Argixerolls, loamy-skeletal, mixed, frigid	35	Smarts
	Typic Argixerolls, Rock outcrop, meadows	25	
	M.U.'s: 121		
Residual Soils With Pyroclastic Influence			
	Andic Xerumbrepts, medial-skeletal, frigid	45	Sheld
	Andic Xerumbrepts, medial over loamy-skeletal, mixed, frigid	30	Iller
	Dystic Xerochrepts, loamy-skeletal, mixed, frigid	10	Jayar
	Lava flows, Rock outcrop, Typic Argixerolls, Pachic Argixerolls, Ultic Haploxeralfs	15	
	M.U.'s: 148, 180		
Wetlands			
	Cumulic Haplaquolls, fine-silty, mixed, frigid	80	Quam
	Typic Argixerolls, Pachic Argixerolls	20	
	M.U.'s: 172		
Residual Soils Formed From Coarse-Grained Igneous Rocks			
1	Dystic Xerochrepts, coarse-loamy, mixed, mesic	60	Gilligan
	Dystic Xerochrepts, loamy, mixed, mesic, shallow	15	Chawanakee
	Ultic Haploxeralfs, fine-loamy, mixed, mesic	15	Holland
	Typic Haploxeralfs, Typic Xerumbrepts, Entic Xerumbrepts	10	
	M.U.'s: 128, 129, 130, 142, 170		

Unit	Classification	% Composition	Family
2	Entic Xerumbrepts	40	Gerle
	Typic Xerumbrepts, coarse-loamy, mixed, frigid	40	
	Lithic Xerumbrepts	10	
	Pachic Xerumbrepts, Rock outcrop	10	
	M.U.'s: 124, 125, 127, 162, 165, 166		
3	Lithic Cryumbrepts, loamy-skeletal, mixed	40	Teewinot
	Dystic Cryochrepts, loamy-skeletal, mixed	30	Endlich
	Rock outcrop	10	
	Typic Cryochrepts, Lithic Cryoborolls, Typic Cryumbrepts	20	
	M.U.'s: 117, 123, 175, 189, 190		
	Residual Soils Formed From Metamorphic Rocks		
1	Dystic Xerochrepts, loamy-skeletal, mixed, mesic	40	Clallam
	Dystic Lithic Xerochrepts, loamy-skeletal, mixed, mesic	20	Deadwood
	Ultic Haploxeralfs, fine-loamy, mixed, mesic	15	Holland
	Ultic Haploxeralfs, loamy-skeletal, mixed, mesic, Typic Haploxerults, Lithic Xerumbrepts, Haploxeralfs, Lithic Argixerolls, Ultic Argixerolls	25	Skalan
	M.U.'s: 106, 109, 110, 112, 113, 114, 118, 119, 131, 132, 141, 144, 153, 182, 184, 185		
2	Lithic Xerumbrepts, loamy-skeletal, mixed, frigid	40	Woodseye
	Dystic Xerochrepts, loamy-skeletal, mixed, frigid	35	Jayar
	Typic Xerumbrepts, loamy-skeletal, mixed, frigid	20	Nanny
	Ultic Haploxeralfs, Rock outcrop	5	
	M.U.'s: 147, 150, 165, 166, 197, 198		
3	Ultic Haploxeralfs, loamy-skeletal, mixed, mesic	35	Skalan
	Ultic Haploxeralfs, fine-loamy, mixed, mesic	25	Holland
	Pachic Xerumbrepts, loamy-skeletal, mixed, mesic	15	Tallac
	Dystic Xerochrepts, Typic Xerumbrepts	25	
	M.U.'s: 143, 183, 187		

Unit	Classification	% Composition	Family
Residual Soil Formed From Ultramafic and Serpentinic Rocks			
1	Lithic Ruptic-Xerochreptic Haploxerales	40	
	Typic Xerochrepts, loamy-skeletal, mixed, mesic	20	Olete
	Mollic Haploxerales, clayey-skeletal, serpentinitic, mesic	15	Dubakella
	Pachic Argixerolls, Lithic Mollic Haploxerales, Lithic Argixerolls, Typic Xerochrepts, Typic Haploxerales, Rock outcrop	25	
	M.U.'s: 101, 122, 134, 140, 151, 155, 157, 161, 168, 196		
2	Mollic Palexerales, clayey-skeletal, serpentinitic, frigid	50	Tangle
	Mollic Haploxerales, loamy-skeletal, mixed, frigid	20	Etchen
	Typic Haploxerales, loamy-skeletal, serpentinitic, frigid	15	Toadlake
	Lithic Argixerolls, Typic Haploxerales, Typic Xerochrepts, Rock outcrop, Lithic Xerorthents	15	
	M.U.'s: 158, 159, 171, 188, 191, 199		

Soil Descriptions and Broad Land Use Capability

Young Soils Formed From Pyroclastic Material

Description of 1

Well drained and somewhat excessively drained, gently sloping to steep soils on volcanic mountainsides and flats.

The families in this group make up about 4 percent of the survey area. They are on mountains and upland flats throughout the area. The soils are well drained and somewhat excessively drained sands to sandy loams that formed in material weathered from basaltic and andesitic rocks.

Elevations range from 4,500 to 7,000 feet. The average annual precipitation is 20 to 40 inches and the mean annual temperature is 36 to 46°F. The frost-free season is 50 to 100 days.

These families are used mostly for timber production and wildlife habitat.

Description of 2

Well drained and somewhat excessively drained, gently sloping to steep soils on volcanic uplands.

The families in this group make up about 3 percent of the survey area. They are on flats and slopes in large bodies on volcanic uplands. The soils are well drained and somewhat excessively drained sandy loams that formed in materials weathered from extrusive igneous rocks (cinders, basalt, and/or andesite) overlaid by young pumice and ash deposits.

Elevations range from 5,000 to 7,000 feet. The average annual precipitation is 20 to 40 inches and the mean annual temperature is 36 to 44°F. The frost-free season is 50 to 100 days.

These families are used mainly for timber production and wildlife habitat.

Residual Soils Formed From Volcanic Flow Material

These soils are listed in sequence from low precipitation and least productive to high precipitation and most productive for timber.

Description of 1

Well drained, nearly level to moderately steep soils on lava flows and volcanic uplands.

The families in this group make up about 3 percent of the survey area. They are on mountain sideslopes and lava flows on volcanic upland terraces throughout the area. The soils are well drained, loamy sands to silty loams that formed in material weathered from andesitic and basaltic rocks.

Elevations range from 4,200 to 5,800 feet. The mean annual precipitation is 9 to 12 inches and the mean annual temperature is 47 to 56°F. The frost-free season is 50 to 100 days.

These families are used mainly as rangeland and wildlife habitat, with some limited timber production in smaller areas.

Description of 2

Well drained, gently sloping to steep soils on volcanic uplands and terraces.

The families in this group make up about 5 percent of the survey area. They are on mountain footslopes, upland terraces and glacial outwash deposits throughout the area. The soils are well drained loams that formed in material weathered from residual, alluvial or glacial outwash deposits of andesite and basalt.

Elevations range from 4,300 to 5,600 feet. The mean annual precipitation is 15 to 30 inches and the mean annual temperature is 47 to 52°F. The frost-free season is 50 to 100 days.

These families are used mainly for woodland timber production and rangeland. Other uses include wildlife habitat and recreation.

Description of 3

Well drained, gently sloping to steep soils on uplands.

The families in this group make up 4 percent of the survey area. They are on uplands throughout the area. The soils are well drained loams that formed in material weathered from metamorphic and igneous rocks.

Elevations range from 4,600 to 6,800 feet. The average annual precipitation is 20 to 60 inches and the mean

annual temperature is 37 to 46°F. The frost-free season is 50 to 150 days.

These families are used primarily for timber production, wildlife habitat and watershed.

Description of 4

Well drained strongly sloping to steep soils on volcanic uplands.

The families in this group make up about 1 percent of the survey area. They are on volcanic mountain sideslopes, uplands and lava flows throughout the area. The soils are well drained loams that formed in materials weathered from extrusive igneous rocks.

Elevations range from 4,500 to 7,000 feet. The mean annual precipitation is 20 to 40 inches and the mean annual temperature is 37 to 46°F. The frost-free season is 50 to 100 days.

These families are used mainly for timber production. Other uses include wildlife habitat and rangeland.

Residual Soils With Pyroclastic Influence

Well drained, moderately sloping to very steep soils on uplands.

The families in this group make up about 6 percent of the survey area. They are on mountain sideslopes throughout the area. The soils are well drained loams to sandy loams that formed in material weathered from tuff, tuff breccia or other extrusive igneous rocks.

Elevations range from 5,000 to 8,500 feet. The mean annual precipitation is 20 to 45 inches and the mean annual temperature is 37 to 45°F. The frost-free season is 50 to 100 days.

These families are used mainly for timber production, wildlife habitat and watershed.

Wetlands

Somewhat poorly drained and poorly drained, nearly level to strongly sloping soils in basins.

The families in this group makes up about 1 percent of the survey area. They occupy basin, basin terrace, low terrace and fan positions throughout the area. The soils are somewhat poorly drained and poorly drained loams that formed in alluvium.

Elevations range form 4,500 to 5,500 feet. The average annual precipitation is 20 to 40 inches and the average annual temperature is 41 to 46°F. The frost-free season is 50 to 150 days.

These families are used mainly for grazing during summer months.

Residual Soils Formed From Coarse-Grained Igneous Rocks

Description of 1

Well drained and somewhat excessively drained, moderately steep soils on uplands.

The families in this group make up about 10 percent of the survey area. They are on mountain sideslopes, footslopes and ridges throughout the area. The soils are well drained and somewhat excessively drained loamy sands to loams that formed in material weathered from granitic rocks.

Elevations range from 1,500 to 5,000 feet. The mean annual precipitation is 35 to 60 inches and the mean annual temperature is 45 to 57°F. The frost-free season is 125 to 200 days.

These families are used primarily for timber production, watershed, wildlife habitat and range.

Description of 2

Well drained and somewhat excessively drained, moderately steep to extremely steep soils on uplands.

The families in this group make up about 8 percent of the survey area. They are on mountain sideslopes throughout the area. The soils are well drained and somewhat excessively drained sandy loams that formed in material weathered from granitic rocks.

Elevations range from 4,800 to 6,800 feet. The mean annual precipitation is 50 to 75 inches and the mean annual temperature is 37 to 45°F. The frost-free season is 100 to 175 days.

These families are used mainly for timber production, watershed and wildlife habitat.

Description of 3

Well drained and somewhat excessively drained, steep to extremely steep soils on uplands.

The families in this group make up about 5 percent of the survey area. They are on mountain sideslopes, ridges and cirque headwalls throughout the area. The soils are well drained and somewhat excessively drained loams to sandy loams that formed in materials weathered from granitic, serpentinitic and metamorphic rocks.

Elevations are 6,500 to 8,000 feet. The mean annual precipitation is 60 to 80+ inches and the mean annual temperature is 35 to 40°F. The frost-free season is less than 90 days.

These families are used mainly for watershed, wildlife and rangeland.

Residual Soils Formed From Metamorphic Rocks

Description of 1

Well drained and somewhat excessively drained, strongly sloping to extremely steep soils on uplands.

The families in this group make up about 25 percent of the survey area. They are on mountain sideslopes, colluvial footslopes and narrow ridges throughout the area. The soils are well drained and somewhat excessively drained loams that formed in materials weathered from metamorphic rocks.

Elevations range from 1,200 to 5,200 feet. The mean annual precipitation is 45 to 90 inches and the mean annual temperature is 45 to 55°F. The frost-free season is 100 to 200 days.

These families are used mainly for timber production. Other uses include watershed, wildlife and rangeland.

Description of 2

Well drained and somewhat excessively drained, gently sloping to extremely steep soils on uplands and high terraces.

The families in this group make up about 12 percent of the survey area. They are on mountain sideslopes, colluvial footslopes and moraines throughout the area. The soils are well drained and somewhat excessively drained loamy sands to loams that formed in materials weathered from metamorphic rocks.

Elevations range from 4,800 to 7,000 feet. The mean annual precipitation is 50 to 100 inches and the mean annual temperature is 37 to 46°F. The frost-free season is 100 to 150 days.

These families are used mainly for watershed, wildlife habitat and rangeland. Other uses include commercial timber production.

Description of 3

Well drained moderately steep to very steep soils on uplands.

The families in this group make up about 5 percent of the survey area. They are on broad mountain sideslopes, ridges and landslide benches throughout the area. The soils are well drained sandy loams to loams that formed in materials weathered from metamorphic rocks.

Elevations range from 1,500 to 7,000 feet. The mean annual precipitation is 30 to 70 inches and the mean annual temperature is 38 to 55°F. The frost-free season is 100 to 200 days.

These families are used mainly for timber production. Other uses include rangeland, wildlife habitat and watershed.

Residual Soils Formed From Ultramafic and Serpentinitic Rocks

Description of 1

Well drained strongly sloping to extremely steep soils on uplands.

The families in this group make up about 5 percent of the survey area. They are on mountain sideslopes and colluvial footslopes throughout the area. The soils are well drained loams to silt loams that formed in materials weathered from ultramafic and serpentinitic rocks.

Elevations range from 500 to 5,000 feet. The mean annual precipitation is 30 to 80 inches and the mean annual temperature is 47 to 60°F. The frost-free season is 125 to 200 days.

These families are used mainly for watershed, wildlife habitat and rangeland.

Description of 2

Well drained and somewhat excessively drained moderately steep to extremely steep soils on uplands.

The families in this group make up about 3 percent of the survey area. They are on mountain sideslopes, colluvial footslopes and landslide benches throughout the area. The soils are well drained and somewhat excessively drained sandy loams to sandy clay loams that formed

in materials weathered from ultramafic and serpentinitic rocks.

Elevations range from 4,200 to 6,800 feet. The mean annual precipitation is 30 to 60 inches and the mean annual temperature is 37 to 45°F. The frost-free season

is 100 to 175 days.

These families are used mainly for wildlife habitat and watershed. Other uses include timber production and rangeland.

Detailed Soil Map Units

Definitions and Criteria

The map units on the soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses.

Each map unit on the soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have similar profiles make up a family. Except for relatively minor variations, all of the soils of one family have major horizons that are similar in such important characteristics as texture, thickness and arrangement. Each family is given the name of the soil series that has been designated as representative for that family. Hades and Holland families are the names of two soil families mapped in the survey area. This does not mean that these soil series were mapped here, but rather the taxonomic families of which those series are members. The Hades series, for example, is a member of the fine-loamy, mixed, frigid family of Pachic Argixerolls. All the soils in the United States that have the same family names may differ in slope, stoniness, depth or some other characteristic affecting land use. On the basis of such differences, a soil family is divided into phases. The name of a soil phase indicates a feature that affects management. For example, Clallam family, very deep, is a phase within the Clallam family.

Many map units are made up of two or more major soils. These map units are called soil complexes or soil associations.

A soil complex consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Inville - Wintoner families complex, 2 to 15 percent slopes, is an example.

A soil association is made up of two or more geographically associated soils that are shown as one unit on the maps. Because of present or anticipated soil uses in the survey area, it was not considered practical or necessary to map the soils separately. The pattern and relative proportion of the soils are somewhat similar. Vipont - Hades families association, 15 to 50 percent slopes, is an example.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description.

This survey includes miscellaneous areas. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example. Miscellaneous areas are shown on the soil maps.

The soil legend at the back of this report gives the acreage and proportionate extent of each map unit. Table 1 lists the map units in which each soil occurs as a primary component or as an inclusion. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

TABLE 1. - Soil Components in Map Units

Component Name	Named Primary Component	Named Inclusion
Aiken	101, 102, 139, 140	
Avis	103, 169	
Beaughton	151	
Belzar	104, 105	
Bluesprin	106, 154	153, 185
Buell	107, 123	
Chawanakee	128	119
Cinder Lands	108	
Clallam, deep	109, 111, 112, 113, 114 118, 132, 140, 141, 182, 183	106, 119, 131, 138, 143 144, 153, 154, 184
Clallam, very deep	110, 111, 115	
Coboc	116, 141	113, 114, 137, 143, 144
Cowiche	177	
Deadfall	117	
Deadwood	112, 118, 119	106, 109, 113, 114, 132, 140, 141, 143, 144, 153, 182, 183, 184, 185
Decy	183	143
Deetz	120	
De Masters	121	
Deven	178, 179	
Dubakella	122, 155	109
Dumps	102	
Endlich	123, 189	175, 190
Entic Xerumbrepts	124, 125, 127	162
Etchen	126, 167	
Gerle	124, 125, 127	
Gilligan	128, 129, 130, 133, 142	119
Goldridge	129, 133	109, 110, 112, 113
Goldridge, gravelly	114, 131, 132	
Guemes	134	109, 110, 131, 138, 140, 151, 157, 161, 168, 196
Hades	194	
Haplic Durixeralfs	135, 136	192
Helvetia	137	
Holland	113, 116, 130, 138, 139, 140, 141, 142, 143, 144, 153	110, 112, 136, 137, 183, 185

Component Name	Named Primary Component	Named Inclusion
Iller	180	
Inville	145, 146, 147	149, 156
Jayar	148, 149, 150, 176, 198	156, 170, 197
Kang	151	
Kilmerque	192	
Lava Flows	153, 181	
Lithic Argixerolls	191	188, 194, 195, 199
Lithic Cryoborolls	117	
Lithic Haploxeralfs	153, 184, 196	144, 151
Lithic Haploxerolls	193	
Lithic Mollic Haploxeralfs	106, 149, 154, 155, 156, 185	134, 184
Lithic Ruptic-Xeroch- reptic Haploxeralfs	157, 158, 168, 171	159
Lithic Xerorthents	159, 160, 161	128, 130, 155, 158, 171
Lithic Xerumbrepts	162	119, 124, 125, 127, 170, 176
Merkel	163	
Mollic Haploxeralfs	199	101, 140, 151
Mollic Palexeralfs	199	
Morical	136, 164	
Nanny	165, 166, 186	187
Neuske	126, 167	
Olete	157, 168	101, 110, 122, 131, 134, 138, 155
Oosen	103, 169	
Ovall	170	
Parks	158, 171	159
Prather	132	114
Quam	172	
Redcap	173	104, 105
Riverwash	115, 174	
Rock Outcrop	119, 156, 159 160, 162, 175 190, 197	101, 102, 103, 106, 107, 108, 109, 112, 113, 114, 117, 118, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 132, 133, 134, 141, 142, 144, 145, 146, 148, 149, 150, 151, 153, 154, 155, 157, 158, 161, 165, 166, 168, 170, 171, 173, 176, 177, 178, 179, 180, 182, 183, 184, 186, 187, 188, 189, 191, 193, 194, 195, 196, 198,

Component Name	Named Primary Component	Named Inclusion
Rogue	176	148, 156, 170, 197
Ruclick	177, 178, 179	
Sheld	180, 181	
Skalan	143, 144, 182, 183, 184, 185	109, 110, 118
Smarts	121	
Stonewell	173	
Tallac	125, 186, 187	127, 147, 198
Tangle	188	
Teewinot	175, 189, 190	123
Toadlake	191	159, 188
Trojan	192	
Typic Haploxerolls	193	
Ultic Haploxerals	187	
Vipont	194	
Washoe	195	
Weitchpec	196	101, 110, 122, 131, 134, 138, 155
Wintoner	146, 147	149, 156
Wintoner, pumice overburden	104, 105	
Woodseye	150, 197, 198	147, 149
Worley	164	
Zeibright	170	

Management Interpretations: Definitions and Criteria

Each soil mapping unit is described in the following tables, along with characteristics of the associated individual soils that can be interpreted for management purposes. The mapping unit descriptions contain the composition of the units by designation of the major components, inclusions and their proportions, and also lists some of the landscape features and typical vegetative cover of the major components.

Interpretations important for management are listed for the components of each mapping unit. An explanation of the ratings are given in the tables which follow.

Available Water Capacity (AWC)

The available water capacity is the capacity of a soil to store water for use by plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is expressed as inches of available water per inch of soil, and is directly related to soil texture.

Below is a list of the AWC's of the textural classes:

Textural Class	Probable range on basis of texture ¹
Very fine-fine (clay, silty clay, sandy clay)	.12 - .17
Moderately fine (clay loam, silty clay loam, sandy clay loam)	.17 - .19
Medium (loam, silt loam, silt, very fine sandy loam)	.12 - .17
Moderately coarse (fine sandy loam, sandy loam, loamy very fine sand, loamy fine sand)	.08 - .12
Coarse (loamy sand, loamy coarse sand, fine sand, sand)	.06 - .08
Very coarse (coarse sand, gravel)	.03 - .06

¹ These figures represent the probable ranges for each textural class based only on texture. Where gravel or other rock fragments are present, values for textures shown above are reduced by the percent gravel or rock fragments present. These figures may also be slightly altered by structure and organic matter content.

Infiltration

Infiltration is the rate at which water enters into the soil from the surface. It depends primarily on texture, but is also affected by structure and organic matter of the surface horizon. The same rates and classes that have been set up for permeability ratings (following table) also apply to infiltration. However, infiltration is determined by the texture of the surface horizon.

HSG - Hydrologic Soil Group

The hydrologic soil groups rate the soils according to their ability to accept and transmit water down through the profile. The HSG should be used in conjunction with other factors such as slope and vegetation to estimate the potential surface runoff. The methodology for rating the soils was developed by the Soil Conservation Service - USDA. The four groups are:

Group A - Soils having high infiltration rates even when thoroughly wetted, consisting chiefly of deep, well to excessively drained sands and/or gravel. These soils have a high rate of water transmission and normally result in a low runoff potential.

Group B - Soils having moderate infiltration rates when thoroughly wetted, consisting chiefly of moderately deep to deep, moderately well to well drained soils, with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.

Group C - Soils having slow infiltration rates when thoroughly wetted, consisting chiefly of (a) soils with a layer that impedes the downward movement of water, or (b) soils with moderately fine to fine textures and a slow infiltration rate. These soils have a slow rate of water transmission.

Group D - Soils having very slow infiltration rates when thoroughly wetted, consisting chiefly of shallow soils over nearly impervious materials. These soils have a very slow rate of water transmission and usually a high runoff potential.

Permeability

Soil permeability is the quality of a soil that enables water or air to move through it. It is measured as the rate at which soil transmits water, principally downward, while saturated. The rate is based on the texture of the least permeable layer within the soil profile, but it is also influenced by structure, pore space and clay mineralogy. Certain special features are also

Texture	Textural Class	General	Perm. Class*	Perm. Rate
gravel coarse sand very coarse sand	very coarse	sandy	very rapid	>20.0
sands loamy coarse sand loamy sand	coarse		rapid	6.0-20.0
coarse sandy loam sandy loam fine sandy loam	moderately coarse	loamy	moderately rapid	2.0-6.0
very fine sandy loam loam silt loam silt	medium		moderate	0.6-2.0
clay loam sandy clay loam silty clay loam	moderately fine		moderately slow	0.2-0.6
sandy clay silty clay clay (40-60% clay)	fine	clayey	slow	0.06-0.2
clay (>60% clay) claypan, hardpan, rock	very fine		very slow	<0.06

* Rate one class lower if extremely cobbly or stony. Rate one class higher if very gravelly and two classes higher if extremely gravelly. Adapted from Soil Permeability Related to Soils, Memo - 45 (16)

considered, such as cemented horizons, rock content and clay pans.

The above chart presents the permeability ratings for soil textures and textural classes:

Maximum Erosion Hazard

Many land use activities have the potential to cause erosion rates to exceed natural soil erosion or soil formation rates. Potential consequences of accelerated erosion include reductions in the productive capacity of the soil and adverse effects on water quality. Many interrelated factors are evaluated in an EHR system to determine

whether land use activities would cause accelerated erosion, and to what degree accelerated erosion would cause adverse effects. It is designed to appraise the relative risk of accelerated sheet and rill erosion. The system does not rate gully erosion, dry ravel, wind erosion, or mass wasting.

The adjective erosion hazard ratings are described below in terms of the likelihood and consequences of accelerated erosion. As the risk of accelerated erosion increases, so does the likelihood that accelerated erosion will exceed soil formation rates. The risk and consequence becomes especially critical for shallow and moderately deep soils over consolidated materials.

The maximum EHR are based on little or no vegetative cover present and on the long-term average occurrence of 2-year, 6-hour storm events. Erosion hazard risks are greater when storm frequency, intensity and/or duration exceed long-term average occurrence, and risks are less when occurrence is below "average". The risks and consequences for adjective erosion hazard ratings are described below.

Low EHR. Accelerated erosion is not likely to occur, except in the upper part of the Low EHR numerical range, or during periods of above average storm occurrence. If accelerated erosion does occur, adverse effects on soil productivity and to nearby water quality are not expected. Erosion control measures are usually not needed for these areas.

Moderate EHR. Accelerated erosion is likely to occur in most years. Adverse effects on soil productivity (especially to shallow and moderately deep soils) and to nearby water quality may occur for the upper part of the Moderate EHR numerical range, or during periods of above average storm occurrence. The need for erosion control should be evaluated for these areas. A wide selection of measures and application methods are available.

High EHR. Accelerated erosion will occur in most years. Adverse effects on soil productivity (especially to shallow and moderately deep soils) and to nearby water quality are likely to occur, especially during periods of above average storm occurrence. Erosion control is necessary for these areas to prevent accelerated erosion. The selection of measures and methods of application are somewhat limited.

Very high EHR. Accelerated erosion will occur in most years. Adverse effects on soil productivity and to nearby water quality are very likely to occur, even during periods of below average storm occurrence. Erosion control is essential for these areas to prevent accelerated erosion. The selection of measures and methods of application are limited.

Soil-Erodibility Factor (K)

The K factor is a value obtained for a soil, which represents that soil's physical capability to resist erosion. In this report, the K-Factor was calculated from the Wischmeier Nomograph (20). This is based on the most significant soil characteristics affecting soil erodibility, which includes texture, structure, organic matter, rock fragments by volume and permeability. Values of K range from 0.02 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water.

Drainage

Soil drainage refers to the capacity and extent of the removal of water from the soil, in relation to additions, especially by surface runoff and by flow through the soil to underground spaces.

There are 7 soil drainage classes. They are determined by runoff - the rate water is removed by flow over the soil surface; soil permeability - this was defined previously; and internal soil drainage - that quality of a soil that permits the downward flow of excess water through it.

The 7 soil drainage classes are as follows:

Very poorly drained: The soil is wet a greater part of the time with the water table present above 18 inches, or the top 7 inches of soil meet certain color requirements (mottles present).

Poorly drained: The soil remains wet much of the time with the water table present at depths of 18 to 36 inches, or the color requirement occurs between 7 and 20 inches.

Somewhat poorly drained: The soil is wet for significant periods, but not all of the time, usually because of a slowly permeable layer or a high water table. The water table is present at depths of 36 to 60 inches, or the mottled colors occur at depths of 20 to 36 inches.

Moderately well drained: Profile is wet for a small but significant part of the time, usually because of a slowly permeable layer within or immediately beneath the soil, a relatively high or intermittently high water table (usually below 5 feet), surface additions of water by runoff from areas higher up the slopes, or a combination of these conditions.

Well drained: Water is removed from the soil readily but not rapidly. Soils are commonly intermediate in texture. Soils are free from mottling and the water table is present at greater than 60 inches. Soil aeration is not a problem with well drained soils.

Somewhat excessively drained: Water is removed from these soils rapidly. Soils may be very shallow or shallow, may have little horizon differentiation and are sandy and very porous.

Excessively drained: Water is removed from these soils very rapidly. Soils are commonly shallow or very shallow, and may be steep, very porous or both. Most of these soils are very droughty.

Soil Manageability

The soil manageability classification rates soils and their topography on the basis of features which reduce the ease of equipment operation and increase required soil protection measures for most systems, particularly those commonly practiced in forestry and intensive range management.

Classes of soil manageability are interpretations for taxonomic units or soil map unit components.

Definitions of soil manageability classes.

Class 1. Easy to manage. Soils in this class are on stable slopes of less than 30%. They are moderately deep or deep and do not have any more than slight management problems. No management option modifiers apply to this class.

Class 2. Readily manageable. Soils in this class are on slopes of less than 30%, but have a moderate management option modification, such as moderate erosion potential.

Class 3. Moderately difficult to manage. Soils in this class are on steep slopes (30 to 60%), or have a substantial management option modification, or both.

Class 4. Very difficult to manage. Soils in this class are on very steep slopes (>60%). They may or may not have other management option modifiers.

The management option modifiers are:

"G" if the slope gradient is greater than 60 percent, and "g" if it is 30 to 60 percent; "S" if the slope stability is low, and "s" if it is moderate; "E" if the maximum erosion hazard is high or very high, and "e" if it is moderate; "D" if the soil depth is less than 25 centimeters (10 inches), and "d" if it is 25 to 50 centimeters (10 to 20 inches); "P" if the available water capacity (AWC) in 50 centimeters (20 inches) is less than 3 centimeters (1.2 inches), and "p" if it is 3 to 6 centimeters (1.2 to 2.4 inches); "W" if the wetness is poorly drained, and "w" if it is somewhat poorly drained; "X" if rock outcrop or surface boulders is greater than 15 percent, and "x" if it is 3 to 15 percent.

Soil map unit manageability groups have been developed for utilization in broad planning. These groups rate soil map units. Only one group is applied to a map unit, whereas soil manageability classes rate soil map unit

components and as many classes may apply to a map unit as there are major components in the soil map unit.

The following is a list of manageability groups.

Group I. Class 1 components predominate, with less than 50% class 2, less than 20% class 3, and less than 10% class 4 components by area.

Group II. Class 2 components predominate with less than 50% class 3 components and less than 20% class 4 components by area.

Group III. Class 3 components predominate, with less than 40% class 4 components by area.

Group IV. Class 4 components predominate, or occupy at least 40% of the map unit area.

Range Type

Range type is determined by the vegetation types and subtypes that dominate the range. Range types that are present in this report are described in the following:

1. **Perennial Grasslands:** Open grasslands where bunch grasses and other perennial grasses predominate. Forbs, sedges and shrubs (not over 20% canopy) may also occur.

2. **Meadow:** Level or gently sloping areas with above average soil moisture, usually predominated by sedges, rushes, moisture-enduring grasses and forbs.

3. **Perennial Forbs:** Untimbered areas where perennial forbs predominate. These types may be the result of disturbance or they may be areas in pristine condition.

4. **Sagebrush:** Untimbered lands where sagebrush, rabbitbrush or shrubby species of similar appearance predominate.

5. **Browse/Mountain Shrub/Chapparral:** Untimbered lands where shrubs such as mountain mahogany, bitterbrush, willow and deerbrush predominate this type. Sagebrush is not included as a main vegetation type. The chapparral browse type is characterized by chamise, manzanita, buckwheat and ceanothus.

6. **Conifer:** Range in coniferous timber, usually consisting of grasses, forbs and browse.

7.& 8. **Waste/Barren:** Unsuitable range, and designated when necessary to differentiate them from adjacent or surrounding suitable range type.

9. **Pinyon/Juniper:** This type includes pinyon pine, juniper and digger pine, and differs from the conifer type in regards to location, grazing capacity and management. The forage may vary from a pure stand to a mixture of grasses, forbs and shrubs.

10. **Broad Leaf Trees:** This type includes range that is in deciduous timber, such as aspen, cottonwood, oak, birch, alder, ash, elm, etc. The proportion of perennial grasses, forbs and shrubs varies.

10B. **Woodland/Chaparral:** Dense wooded foothill areas supporting sufficient herbaceous and/or browse plants for the grazing of livestock. Herbaceous plants may be perennial or annual grasses and forbs, alone or in mixtures.

Range Sites

Range sites are broad, ecologic areas within which soils, climate and other environmental factors of strong similarity exist or are potential.

Certain range sites may occur interspersed with others within wide geographic areas; for instance subirrigated sites may be closely associated with perennial dryland, semidesert shrub, commercial timber sites, etc.

Various vegetation types (classified and mapped according to the aspect given by the dominant vegetation cover) may exist on any or all of these range sites.

A deteriorated range site may have a cover aspect completely different than the aspect it would have if the vegetation represented the potential for the site. The range sites present in this survey area are described below.

Site I. Season-Long Subirrigated (wet meadow)

1. Surface soil moisture is adequate throughout the summer.
2. Vegetation types present are
 - 2 - Wet meadow
 - 3,4,5 - occasionally present

Site II. Part-Season Subirrigated Site (dry or semi-wet meadow)

1. Soil moisture is available during the first half of summer. Vegetation becomes dry during late summer.
2. Vegetation types present are
 - 2 - Semi-wet or dry meadow
 - 3,4,5 - occasionally present

Site III. Perennial Dryland Bunchgrass Site (medium to deep soils)

1. Dry sites, other than meadows where perennial bunchgrass is dominant herbaceous vegetation.
2. Vegetation types present are
 - 1 - Open perennial grassland.
 - 3 - Wyethia
 - 4 - Big sagebrush/bunchgrass
 - 5 - Browse/mountain shrub
 - 6 - Pine/sagebrush/bunchgrass
 - 9 - Juniper/sagebrush/bunchgrass

Site IV. Perennial Dryland Bunchgrass Site (shallow, hardpan or rocky soils; frequently surface rocks)

1. Dry sites, other than dry meadows, with primarily bunchgrass.
2. Vegetation types present are
 - 4 - Sagebrush/bunch grass (black sage)
 - 5 - Bitterbrush/sagebrush/bunchgrass
 - 9 - Juniper/sagebrush/bunchgrass

Site VI. Woodland/Chaparral/Browse/Grass Site

1. Canopy is greater than 50% deciduous and/or 25% evergreen trees or shrubs, usually with perennial or annual grasses and forbs.
2. Vegetation types present are
 - 10B - Woodland/chaparral
 - 5 - Chaparral/browse/grass

Site VIII. Subalpine Upland Site

1. Untimbered dryland range above 8,000 feet. Immature, fragile and shallow porous soils in formative stages on ridges and steep slopes. Severe winters and cool summers.
2. Vegetation types present are
 - 1 - Open perennial grassland
 - 3 - Alpine weeds (transitional)
 - 4 - Sagebrush/bunchgrass
 - 10 - Aspen

Site IX. Commercial Timber Site

1. Coniferous timber belt generally at mid-elevations.
2. Vegetation types present are
 - 6 - Various combinations of conifer overstory supporting browse
 - 5 - Browse/mountain shrub

Annual Forage Production

Annual forage production is an estimate of the pounds per acre of forage. Two values are listed. The first entry estimates existing conditions, and the second entry estimates potential production under intense management. Steep slopes as a limiting factor have been factored into the estimates.

Forest Survey Site Class (Productivity)

The Forest Survey Site Class is an estimate of a site's suitability for commercial conifer production. It is based on soil and environmental factors such as soil depth, parent material, AWC of the total profile (to 60 inches or to a lithic contact), precipitation, temperature, aspect, pH, compaction and depth to standing water table.

The Forest Survey Site Class is a seven class system for expressing site productivity for timber, where each class is defined in terms of a range of cubic foot yields at culmination of mean annual increment in managed even-age stands:

Forest Survey Site Class	M.A.I. at Culmination (cu ft./acre/year)
1	225+
2	165-224
3	120-164
4	85-119
5	50-84
6	20-49
7	<20

Regeneration Potential

This is a relative rating of the potential for survival of bare root seedlings the first season following planting. Survival, in the absence of plant competition, can be predicted by comparing the water requirements of conifer seedlings to water storage in the upper 20 inches of soil, assuming that soils capable of supporting commercial conifer growth are completely recharged with water each winter. Water requirements can be estimated in terms of actual evapotranspiration from mean July air temperature, slope gradient and aspect factors, by a means developed by E.B. Alexander, U.S. Forest Service (1). The difference between available water storage in the upper 20 inches of soil and the estimated water requirement results in a water balance. A rating scheme for seedling survival based on this water balance is presented below:

Water Balance (inches)	Class	Chance of seed- ling Survival
>2.0	large surplus	high
1.1-2.0	moderate surplus	moderate
0-1.0	small surplus	low
<0	deficit	very low

Engineering Classification Systems

AASHTO

The American Association of State Highway and Transportation Officials (AASHTO) system of soil classification is based upon the observed field performance of soils under highway pavements and is widely known and used among highway engineers.

According to this system, soils having approximately the same general load-carrying capacity and service characteristics are grouped together to form seven basic groups which are designated as A-1, A-2, A-3, A-4, A-5, A-6 and A-7. In general, the best soils for highway subgrades are classified as A-1, the next best A-2 and so on with the poorest rating of soils for subgrades being those in the A-7 group.

The system is further divided into subgroups as a means of evaluating soils as subgrade materials within their groups.

AASHTO classification is based on soil texture, liquid limit and plasticity index. The AASHTO ratings assigned in this report were developed from field estimates of USDA textures and are intended as general guides.

Unified

The Unified Soil Classification system was established by the U.S. Army Corps of Engineers. It is based on the identification of soils according to their texture and plasticity, and on their performance as engineering construction materials. The Asphalt Institute (2) provides a complete discussion of the Unified Soil Classification System.

The Unified Soil Classification ratings assigned in this report were developed from field estimates of the U.S.D.A. textures and are intended as general guides. The actual Unified Soil Classification ratings may vary.

101 Aiken family, 15 to 50 percent slopes

Elevation: 2,000 to 5,200 feet Annual Precipitation: 50 to 100 inches

Aiken family

Soil Map Unit Components

Approximate Proportion

80%

Landscape Position

Broad ridges and sideslopes.

Slope

15 to 50 percent

Typical Vegetation

Douglas-fir, sugar pine, tanoak, madrone.

Soil Profile Description

Surface Layer

0-9 inches. Reddish brown gravelly loam; weak medium granular structure; slightly acid.

Subsoil

9-49 inches. Reddish brown gravelly clay loam; moderate very fine subangular blocky structure; slightly acid.

Substratum or Parent Material

49-67 inches. Reddish yellow silt loam; massive; slightly acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

60+ inches. Serpentinized metamorphic rock.

Available Water Capacity

Total

7.9

Upper 20 inches

2.4

Infiltration Rate

Moderate

Hydrologic Soil Group

B

Permeability Class

Slow to Moderately Slow

Erosion Hazard, Maximum

Moderate

Erosion Factor (K)

.15

Drainage Class

Well

Soil Manageability

Class

2ex

Group

II

Range Type

Conifer (6)

Range Site

IX

Annual Forage (lb/acre)

250-750

Forest Survey Site Class

2 to 3

Relative Chance of Seedling Survival

Moderate

AASHTO: Surface Subsurface

A-4

A-6

Unified: Surface Subsurface

ML

CL

Inclusions:

20% Olete, Weitchpec, and Guemes families; Mollic Haploxeralfs; rock outcrop.

102 Aiken family-Dumps, mine tailings association, 2 to 30 percent slopes

Soil Map Unit Components	Elevation: 600 to 1,200 feet	Annual Precipitation: 50 to 70 inches
	Aiken family	Dumps, mine tailings
	Approximate Proportion	60%
	Landscape Position	Dissected high terraces.
	Slope	2 to 30 percent
Typical Vegetation	Douglas-fir, sugar pine with tanoak and madrone.	Sparse riparian vegetation or bare.

Soil Profile Description

Surface Layer	0-9 inches. Reddish brown gravelly loam; weak medium granular structure; slightly acid.
Subsoil	9-49 inches. Reddish brown gravelly clay loam; moderate very fine angular blocky structure; medium acid.
Substratum or Parent Material	49-67 inches. Reddish yellow silt loam; massive; slightly acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	60+ inches. Weathered alluvium.	
Available Water Capacity		
Total	7.9	0.01
Upper 20 inches	2.4	
Infiltration Rate	Moderate	Very Rapid
Hydrologic Soil Group	B	A
Permeability Class	Moderately Slow	Very Rapid
Erosion Hazard, Maximum	Moderate	
Erosion Factor (K)	.15	
Drainage Class	Well	
Soil Manageability		
Class	2ex	3PX
Group	II	II
Range Type	Conifer (6)	Waste and Barren (7)
Range Site	IX	None
Annual Forage (lb/acre)	250 to 750	50
Forest Survey Site Class	2	
Relative Chance of Seedling Survival	Moderate	
AASHTO: Surface	A-4	A-1
Subsurface	A-6	A-1
Unified: Surface	ML	GP, GW
Subsurface	CL	GM or GC
Inclusions:	10% Rock outcrop, eroded terrace deposits.	

103 Avis-Oosen families complex, 15 to 50 percent slopes

Elevation: 4,800 to 6,800 feet Annual Precipitation: 20 to 40 inches
Avis family **Oosen family**

Soil Map Unit Components

Approximate Proportion

60%

30%

Landscape Position
Slope

Mountain sideslopes and lava flow ridges.
15 to 50 percent

Mountain sideslopes.
15 to 50 percent

Typical Vegetation

Mixed conifer, mostly white fir and red fir, snowbrush, blue elderberry, bottlebrush squirreltail.

Mixed conifer, mostly white and red fir, snowbrush, blue elderberry, bottlebrush squirreltail.

Soil Profile Description

Surface Layer

0-6 inches. Very dark grayish brown sand; single grained; slightly acid.

0-11 inches. Light yellowish brown sandy loam; weak very fine granular structure; neutral.

Subsoil

Substratum or Parent Material

6-61+ inches. Yellowish brown very cobbly coarse sand; massive; neutral.

11-71+ inches. Pale brown to light brownish gray loamy sand; weak medium subangular blocky structure to massive; neutral;

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

60+ inches. Volcanic ash, andesite and basalt.

60+ inches. Fractured basalt and andesite

Available Water Capacity

Total

1.5

5.4

Upper 20 inches

0.8

1.7

Infiltration Rate

Very Rapid

Moderately Rapid

Hydrologic Soil Group

A

A

Permeability Class

Rapid

Moderately Rapid to Rapid

Erosion Hazard, Maximum

Moderate

Moderate

Erosion Factor (K)

.24

.24

Drainage Class

Somewhat Excessively

Somewhat Excessively

Soil Manageability

Class

3Pex

2ex

Group

II

II

Range Type

Conifer (6)

Conifer (6)

Range Site

IX

IX

Annual Forage (lb/acre)

250 - 750

250 - 750

Forest Survey Site Class

5

4

Relative Chance of Seedling Survival

Very Low

Moderate

AASHTO: Surface
Subsurface

A-3

A-2-4

A-1

A-2-4

Unified: Surface
Subsurface

SP

SM

SP-SM

SM,ML

Inclusions:

10% Rock outcrop, Andic Xerumbrepts, soils with a clay increase in the subsoil.

104 Belzar-Wintoner, pumice overburden families complex, 2 to 15 percent slopes

Soil Map Unit Components	Elevation: 5,000 to 7,000 feet Annual Precipitation: 20 to 40 inches	
	Belzar family, pumice overburden	Wintoner family, pumice overburden
Approximate Proportion	50%	30%
Landscape Position	Mountain sideslopes and benches.	Mountain sideslopes and benches.
Slope	2 to 15 percent	2 to 15 percent
Typical Vegetation	Mixed conifer, ponderosa pine, white fir, red fir, greenleaf manzanita, snowbrush, squaw carpet.	Mixed conifer, ponderosa pine, white fir, red fir, greenleaf manzanita, snowbrush, squaw carpet.

Soil Profile Description

Surface Layer	0-7 inches. Very dark grayish brown gravelly coarse sandy loam; weak fine granular structure; slightly acid.	0-13 inches. Light yellowish brown extremely gravelly coarse sand; single grain; strongly acid.
Subsoil	7-54 inches. Brown gravelly sandy loam; weak fine and medium subangular blocky structure; medium acid.	13-64 inches. Brown sandy loam; weak to moderate medium and coarse subangular blocky structure; medium acid.
Substratum or Parent Material	54-62 inches. Brown extremely gravelly sandy loam; slightly acid.	64+ inches. Basaltic and andesitic rock and cinders.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	60+ inches. Basalt or andesite rock.	60+ inches. Basalt, andesite and cinders.
Available Water Capacity		
Total	3.9	5.0
Upper 20 inches	1.6	0.9
Infiltration Rate	Moderately Rapid	Very Rapid
Hydrologic Soil Group	B	B
Permeability Class	Moderate to Rapid	Moderate to Moderately Rapid
Erosion Hazard, Maximum	Low	Moderate
Erosion Factor (K)	.15	.05
Drainage Class	Well to somewhat excessively	Well
Soil Manageability		
Class	2p	2e
Group	II	II
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	250-750	250-750
Forest Survey Site Class	4 to 5	4
Relative Chance of Seedling Survival	Very low	Low
AASHTO:		
Surface	A-2-4	A-1
Subsurface	A-4	A-2-4
Unified:		
Surface	SM	SP, GW
Subsurface	ML	SM
Inclusions:	20% Soils similar to Belzar family with a lower base saturation; Redcap family.	

105 Belzar-Wintoner, pumice overburden families complex, 15 to 50 percent slopes

Soil Map Unit Components	Elevation: 5,000 to 7,000 feet Annual Precipitation: 20 to 40 inches	
	Belzar family, pumice overburden	Wintoner family, pumice overburden
	Approximate Proportion	
	Landscape Position	
	Slope	
Typical Vegetation		

Soil Profile Description

Surface Layer	0-7 inches. Very dark grayish brown gravelly coarse sandy loam; weak fine granular structure; slightly acid.	0-13 inches. Light yellowish brown very gravelly coarse sand; single grain; strongly acid.
Subsoil	7-54 inches. Brown gravelly sandy loam; weak fine and medium subangular blocky structure; medium acid.	13-64 inches. Brown sandy loam; weak to moderate medium and coarse subangular blocky structure; medium acid.
Substratum or Parent Material	54-62 inches. Brown very gravelly loam; massive; slightly acid.	64+ inches. Basaltic and andesitic rock and cinders.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	60+ inches. Fractured andesite or basalt.	60 inches. Basalt, andesite and cinders.
Available Water Capacity		
Total	3.9	5.0
Upper 20 inches	1.6	0.9
Infiltration Rate	Moderately Rapid	Very Rapid
Hydrologic Soil Group	B	B
Permeability Class	Moderate to Rapid	Moderate to Moderately Rapid
Erosion Hazard, Maximum	Moderate	Moderate
Erosion Factor (K)	.15	.05
Drainage Class	Well to somewhat excessively	Well
Soil Manageability		
Class	2ep	2e
Group	II	II
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	250-750	250-750
Forest Survey Site Class	4 to 5	4
Relative Chance of Seedling Survival	Low	Low
AASHTO:		
Surface	A-2-4	A-1
Subsurface	A-4	A-2-4
Unified:		
Surface	SM	SP, GW
Subsurface	ML	SM
Inclusions:	20% Rock talus; soils similar to Belzar family with a lower base saturation; Redcap family	

106 Bluesprin family-Lithic Mollic Haploxeralfs association, 30 to 70 percent slopes

Soil Map Unit Components	Elevation: 2,500 to 4,800 feet	Annual Precipitation: 30 to 50 inches
	Bluesprin family	Lithic Mollic Haploxeralfs
Approximate Proportion	60%	20%
Landscape Position	Mountain sideslopes.	Mountain sideslopes, especially south-facing slopes.
Slope	30 to 50 percent	50 to 70 percent
Typical Vegetation	Oregon white oak forest with California fescue and other perennial grasses, few ponderosa pine and canyon live oak.	Buckbrush, silktassel, Oregon white oak, annual grasses, few canyon live oak, Douglas-fir, ponderosa pine, knobcone pine.

Soil Profile Description

Surface Layer	0-11 inches. Brown very gravelly loam; weak fine granular structure; neutral.	0-3 inches. Brown very gravelly sandy loam; weak fine subangular blocky structure; medium acid.
Subsoil	11-23 inches. Brownish yellow very gravelly clay loam; weak fine and medium subangular blocky structure; neutral.	3-14 inches. Brown very gravelly loam; weak fine subangular blocky structure; medium acid.
Substratum or Parent Material	23+ inches. Highly fractured hard schist bedrock.	14+ inches. Fractured metamorphic rock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-60 inches. Fractured metamorphic rock.	Less than 20 inches. Metamorphic bedrock.
Available Water Capacity		
Total	1.7-5.3	1.5 Max.
Upper 20 inches	1.3	1.5
Infiltration Rate	Moderate	Moderately Rapid to Rapid
Hydrologic Soil Group	B	C
Permeability Class	Moderately Slow	Moderately Slow to Moderate
Erosion Hazard, Maximum	High	High
Erosion Factor (K)	.10	.10
Drainage Class	Well	Well
Soil Manageability		
Class	3EX	3Edx
Group	III	III
Range Type	Broadleaf Trees & (10B) Browse Mtn Shrub Chaparral	Broadleaf Trees & (10B) Browse Mtn Shrub Chaparral
Range Site	VI	VI
Annual Forage (lb/acre)	420-700	2
Forest Survey Site Class	2 to 4	5
Relative Chance of Seedling Survival	Low	Low
AASHTO: Surface	A-4	A-1
Subsurface	A-6	A-4
Unified: Surface	GM	GM,SM
Subsurface	SC,CL	GM
Inclusions:	20% Rock outcrop; Clallam family; Deadwood family.	

107 Buell family, 2 to 30 percent slopes

Elevation: 6,500 to 8,000 feet Annual Precipitation: 60 to 80 inches

Buell family

Soil Map Unit Components

Approximate Proportion

75%

Landscape Position

Glaciated valleys.

Slope

2 to 30 percent

Typical Vegetation

Meadows of forbs and perennial grasses with scattered white bark pine, mountain hemlock, brewer spruce, red fir.

Soil Profile Description

Surface Layer

0-7 inches. Brown gravelly loam; massive; very strongly acid.

Subsoil

7-16 inches. Yellowish brown very gravelly loam; massive; very strongly acid.

Substratum or Parent Material

16-60+ inches. Light yellowish brown very gravelly loam; massive; very strongly acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

60+ inches in glacial till.

Available Water Capacity

Total

6.6+

Upper 20 inches

1.9

Infiltration Rate

Moderate

Hydrologic Soil Group

B

Permeability Class

Moderate

Erosion Hazard, Maximum

Moderate

Erosion Factor (K)

.17

Drainage Class

Well

Soil Manageability

Class

2ex

Group

II

Range Type

Meadow (2)

Range Site

II

Annual Forage (lb/acre)

760-1,200

Forest Survey Site Class

3 to 4

Relative Chance of Seedling Survival

Moderate

AASHTO: Surface Subsurface

A-4

A-4

Unified: Surface Subsurface

ML

ML

Inclusions:

25% Rock outcrop; soils similar to Buell, but lacking a clay increase or color change in the subsoil; soils similar to Buell that are very poorly drained; wet areas and meadows.

108 Cinder lands

Soil Map Unit Components	Elevation: 4,400 to 6,800 feet Annual Precipitation: 12 to 30 inches		
	Same soils as adjacent mapping units.	Similar soils as adjacent mapping units.	Same and similar soils as adjacent mapping units with steeper slopes and increased coarse fragment content.
Approximate Proportion	35%	30%	20%
Landscape Position	Tops and sides of cinder cones.		
Slope	30 to 70 percent	30 to 70 percent	70 to 90 percent
Typical Vegetation	Vegetation is dependent on location. A typical vegetative cover would consist of mountain mahogany, rabbitbrush, squaw carpet, greenleaf manzanita and grasses. Occasionally western juniper, ponderosa pine, and white fir.		

Soil Profile Description

Comprised of soils formed from cinders, ash, and other pyroclastic materials. Soils occurring on the cones are of an insignificant amount and are too variable to individually identify.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	Andesitic or basaltic cinders.
Available Water Capacity	
Total	
Upper 20 inches	
Infiltration Rate	
Hydrologic Soil Group	
Permeability Class	
Erosion Hazard, Maximum	
Erosion Factor (K)	
Drainage Class	
Soil Manageability	
Class	3Xe
Group	III
Range Type	Waste & Barren (7)
Range Site	none
Annual Forage (lb/acre)	2
Forest Survey Site Class	
Relative Chance of Seedling Survival	
AASHTO: Surface	
Subsurface	
Unified: Surface	
Subsurface	
Inclusions:	15% Rock outcrop and dissimilar soils

109 Clallam family, deep, 15 to 70 percent slopes

Elevation: 1,500 to 4,800 feet Annual Precipitation: 60 to 90 inches

Clallam family, deep

Soil Map Unit Components	
Approximate Proportion	50%
Landscape Position	Mountain sideslopes, especially north-facing slopes.
Slope	15 to 70 percent
Typical Vegetation	Douglas-fir, sugar pine, tanoak, madrone, longleaf mahonia, modesty flower, deerbrush, bluegrass, bracken fern.

Soil Profile Description

Surface Layer	0-7 inches. Grayish brown very gravelly loam; strong very fine granular structure; slightly acid.
Subsoil	7-30 inches. Light yellowish brown very gravelly clay loam; weak fine subangular blocky structure; medium acid.
Substratum or Parent Material	30-42+ inches. Very pale brown very gravelly clay loam; massive; medium acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40-60 inches. Fractured metamorphic rock.
Available Water Capacity	
Total	3.3-5.1
Upper 20 inches	1.7
Infiltration Rate	Moderately Rapid
Hydrologic Soil Group	B
Permeability Class	Moderately Slow
Erosion Hazard, Maximum	Moderate
Erosion Factor (K)	.10
Drainage Class	Well
Soil Manageability	
Class	3Xe
Group	III
Range Type	Conifer (6)
Range Site	IX
Annual Forage (lb/acre)	150-550
Forest Survey Site Class	3
Relative Chance of Seedling Survival	Moderately High
AASHTO: Surface	A-4
Subsurface	A-4
Unified: Surface	GM
Subsurface	GM
Inclusions:	50% Goldridge family; Skalan and Deadwood families on metamorphic rocks; Guemes and Dubakella families on serpentinite; rock outcrop.

110 Clallam family, very deep, 9 to 70 percent slopes

Elevation: 1,000 to 3,500 feet Annual Precipitation: 40 to 60 inches
Clallam family, very deep

Soil Map Unit Components

Approximate Proportion

70%

Landscape Position

Landslide deposits.

Slope

9 to 70 percent

Typical Vegetation

Douglas-fir, tanoak, madrone, California black oak, canyon live oak, mountain dogwood, deerbrush, poison oak, snowberry, sword fern.

Soil Profile Description

Surface Layer

0-8 inches. Brown gravelly sandy loam; massive; medium acid.

Subsoil

8-31 inches. Yellowish brown very gravelly sandy loam; very weak fine subangular blocky structure; medium acid.

Substratum or Parent Material

31-60+ inches. Light yellowish brown very gravelly loamy sand; massive; medium acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

60+ inches. Colluvium or unconsolidated bedrock.

Available Water Capacity

Total

3.2

Upper 20 inches

1.0

Infiltration Rate

Moderately Rapid

Hydrologic Soil Group

B

Permeability Class

Moderately Slow to Moderately Rapid

Erosion Hazard, Maximum

Moderate to High

Erosion Factor (K)

.17

Drainage Class

Well

Soil Manageability

Class

2ep

Group

II

Range Type

Conifer (6)

Range Site

IX

Annual Forage (lb/acre)

150-550

Forest Survey Site Class

4

Relative Chance of Seedling Survival

Very Low

AASHTO: Surface
Subsurface

A-2-4

A-4

Unified: Surface
Subsurface

SM

ML

Inclusions:

30% Holland, Skalan, and Goldridge families on mixed colluvium; Guemes, Olete, and Weitchpec families on serpentinitic colluvium.

111 Clallam family, deep-very deep association, 2 to 50 percent slopes

Soil Map Unit Components	Elevation: 3,000 to 4,800 feet Annual Precipitation: 60 to 80 inches	
	Clallam family deep	Clallam family, very deep
	Approximate Proportion	50% 30%
	Landscape Position	Ground moraines. Lateral and end moraines.
	Slope	2 to 30 percent 15 to 50 percent
Typical Vegetation	Douglas-fir, sugar pine, tanoak, madrone, longleaf mahonia, modesty flower, deerbrush, bluegrass, bracken fern.	Douglas-fir, sugar pine, madrone, black oak, mountain dogwood.
Soil Profile Description		
Surface Layer	0-7 inches. Grayish brown very gravelly loam; strong very fine granular structure; slightly acid.	0-8 inches. Brown gravelly sandy loam; massive; medium acid.
Subsoil	7-30 inches. Light yellowish brown very gravelly clay loam; weak fine subangular blocky structure; medium acid.	8-31 inches. Yellowish brown very gravelly sandy loam; very weak fine subangular blocky structure; medium acid.
Substratum or Parent Material	30-42 inches. Very pale brown gravelly clay loam; massive; medium acid.	31-60+ inches. Light yellowish brown very gravelly loamy sand; massive; medium acid.
Soil Qualities and Management Interpretations		
Soil Depth and Parent Material	40-60 inches in glacial till.	Greater than 60 inches in glacial till.
Available Water Capacity		
Total	3.6-5.4	3.1
Upper 20 inches	1.7	1.0
Infiltration Rate	Moderate	Rapid
Hydrologic Soil Group	B	B
Permeability Class	Moderately Slow	Moderately Slow to Moderately Rapid
Erosion Hazard, Maximum	Moderate	Moderate
Erosion Factor (K)	.24	.15
Drainage Class	Well	Moderately Well
Soil Manageability		
Class	2ep	3Pe
Group	II	II
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	250-750	250-750
Forest Survey Site Class	3	3
Relative Chance of Seedling Survival	Moderate	Very Low
AASHTO: Surface	A-4	A-4
Subsurface	A-4	A-4
Unified: Surface	SM	SM
Subsurface	SM	SM
Inclusions:	20% Soils containing more clay are present on older moraines.	

112 Clallam, deep-Deadwood families association, 50 to 90 percent slopes

Soil Map Unit Components	Elevation: 500 to 5,000 feet Annual Precipitation: 50 to 90 inches	
	Clallam family, deep	Deadwood family
	Approximate Proportion	60% 30%
	Landscape Position	Mountain sideslopes and colluvial footslopes. Mountain sideslopes and narrow ridges.
	Slope	50 to 90 percent 50 to 90 percent
Typical Vegetation	Douglas-fir, sugar pine, tanoak, madrone, longleaf mahonia, modesty flower, deerbrush, bluegrass, bracken fern.	Canyon oak, madrone, Douglas-fir, sugar pine, poison oak, modesty flower, bracken fern.
Soil Profile Description		
Surface Layer	0-7 inches. Grayish brown very gravelly loam; strong very fine granular structure; slightly acid.	0-2 inches. Grayish brown extremely gravelly loam; strong very fine granular structure; medium acid.
Subsoil	7-30 inches. Light yellowish brown very gravelly clay loam; weak fine subangular blocky structure; medium acid.	2-10 inches. Light gray extremely gravelly loam; weak very fine and fine subangular blocky structure; medium acid.
Substratum or Parent Material	30-42 inches. Very pale brown very gravelly clay loam; massive; medium acid.	10-16 inches. Light gray extremely gravelly loam; massive; medium acid.
Soil Qualities and Management Interpretations		
Soil Depth and Parent Material	40-60 inches. Fractured metamorphic rock.	Less than 20 inches. Metamorphic rock.
Available Water Capacity	Total	3.3-5.1 1.6 Max.
	Upper 20 inches	1.7 1.6
Infiltration Rate	Moderate	Moderate
Hydrologic Soil Group	C	B
Permeability Class	Moderately Slow	Moderately Rapid
Erosion Hazard, Maximum	High	High
Erosion Factor (K)	.10	.10
Drainage Class	Well	Well
Soil Manageability	Class	4Ep
	Group	IV
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	250-750	250-750
Forest Survey Site Class	3	4 to 5
Relative Chance of Seedling Survival	Moderate	Low to Very Low
AASHTO:	Surface	A-4
	Subsurface	A-4
Unified:	Surface	GM
	Subsurface	GM
Inclusions:	10% Rock outcrop; soils similar to Deadwood without the slight clay increase or color change in the subsoil; Holland family; Goldridge family.	

113 Clallam, deep-Holland families association, 30 to 70 percent slopes

Soil Map Unit Components	Elevation: 1,000 to 4,800 feet	Annual Precipitation: 40 to 60 inches	
	Clallam family, deep	Holland family	
	Approximate Proportion	60%	25%
	Landscape Position	Mountain sideslopes.	Broad ridges and sideslopes.
	Slope	50 to 70 percent	30 to 50 percent
Typical Vegetation	Douglas-fir, sugar pine, tanoak, madrone, longleaf mahonia, modesty flower, deerbrush, bluegrass, bracken fern.	Douglas-fir, ponderosa pine, sugar pine, incense cedar, black oak, deer-, brush, madrone, whiteleaf manzanita, poison oak.	

Soil Profile Description

Surface Layer	0-7 inches. Grayish brown very gravelly loam; strong very fine granular structure; slightly acid.	0-8 inches. Pink very gravelly loam; weak fine subangular blocky structure; medium acid.
Subsoil	7-30 inches. Light yellowish brown very gravelly clay loam; weak fine subangular blocky structure; medium acid.	8-60+ inches. Reddish yellow gravelly clay loam; moderate medium subangular blocky structure; strongly acid.
Substratum or Parent Material	30-42 inches. Very pale brown very gravelly clay loam; massive; medium acid.	

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40-60 inches. Fractured metamorphic rock.	40-60+ inches. Fractured metamorphic rock.
Available Water Capacity		
Total	3.3 - 5.1	4.8 - 6.6
Upper 20 inches	1.7	2.3
Infiltration Rate	Moderate	Moderately Slow
Hydrologic Soil Group	B	B
Permeability Class	Moderately Slow	Moderately Slow
Erosion Hazard, Maximum	High	Moderate
Erosion Factor (K)	.10	.15
Drainage Class	Well	Well
Soil Manageability		
Class	3Ep	3ep
Group	III	III
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	150-550	250-750
Forest Survey Site Class	3	2 to 3
Relative Chance of Seedling Survival	Moderate	Moderate
AASHTO: Surface	A-4	A-4
Subsurface	A-4	A-6
Unified: Surface	GM	GM
Subsurface	GM	SC,GC,CL
Inclusions:	15% Deadwood family, on narrow ridges and very steep sideslopes; Coboc family on broad ridges; Goldridge family; rock outcrop.	

114 Clallam, deep-Goldridge, gravelly families association, 30 to 90 percent slopes

Soil Map Unit Components	Elevation: 600 to 4,500 feet	Annual Precipitation: 50 to 80 inches	
	Clallam family, deep	Goldridge family, gravelly	
	Approximate Proportion	60%	20%
	Landscape Position	Mountain sideslopes.	Mountain sideslopes and footslopes.
	Slope	50 to 90 percent	30 to 50 percent
Typical Vegetation	Douglas-fir, sugar pine, tanoak, madrone, longleaf mahonia, deerbrush, bluegrass, bracken fern.	Douglas-fir, sugar pine, tanoak, black oak, madrone, deerbrush, poison oak, sword fern.	
Soil Profile Description			
Surface Layer	0-7 inches. Grayish brown very gravelly loam; strong very fine granular structure; slightly acid.	0-4 inches. Strong brown very gravelly loam; strong very fine granular structure; slightly acid.	
Subsoil	7-30 inches. Light yellowish brown very gravelly clay loam; weak fine subangular blocky structure; medium acid.	4-60+ inches. Reddish yellow gravelly loam; moderate medium subangular blocky structure; medium acid.	
Substratum or Parent Material	30-42 inches. Very pale brown very gravelly clay loam; massive; medium acid.		
Soil Qualities and Management Interpretations			
Soil Depth and Parent Material	40-60 inches. Fractured metamorphic rock.	40-60+ inches. Metamorphic colluvium.	
Available Water Capacity			
Total	3.3-5.1	5.0-7.6	
Upper 20 inches	1.7	2.0	
Infiltration Rate	Moderate	Moderate	
Hydrologic Soil Group	B	B	
Permeability Class	Moderately Slow	Moderately Slow to Moderate	
Erosion Hazard, Maximum	High	Moderate	
Erosion Factor (K)	.10	.10	
Drainage Class	Well	Well	
Soil Manageability			
Class	3EXp	3Xe	
Group	III	III	
Range Type	Conifer (6)	Conifer (6)	
Range Site	IX	IX	
Annual Forage (lb/acre)	2	250-750	
Forest Survey Site Class	3	2 to 3	
Relative Chance of Seedling Survival	Moderate	Moderate	
AASHTO: Surface	A-4	A-4	
Subsurface	A-4	A-6	
Unified: Surface	GM	GM	
Subsurface	GM	SC,GC,CL	
Inclusions:	20% Deadwood family, on narrow ridges and very steep sideslopes; Prather family on broad ridges; rock outcrop; Coboc family.		

115 Clallam family, very deep-Riverwash association, 0 to 15% slopes

Soil Map Unit Components	Elevation: 1,000 to 3,500 feet Annual Precipitation: 40 to 75 inches	
	Clallam family, very deep	Riverwash deposits
	40%	35%
	Alluvial fans and terraces.	Stream channels.
	0 to 15 percent slopes.	0 to 2 percent
Typical Vegetation	Douglas-fir, sugar pine, madrone, black oak, mountain dogwood.	
Soil Profile Description		
Surface Layer	0-8 inches. Brown gravelly sandy loam; massive; medium acid.	Mixed alluvium on nearly level terrain adjacent to rivers and streams.
Subsoil	8-31 inches. Yellowish brown very gravelly sandy loam; very weak fine subangular blocky structure; medium acid.	
Substratum or Parent Material	31-60+ inches. Light yellowish brown very gravelly loamy sand; massive; medium acid.	
Soil Qualities and Management Interpretations		
Soil Depth and Parent Material	Greater than 60 inches in alluvium.	
Available Water Capacity		
Total	3.2	
Upper 20 inches	1.0	
Infiltration Rate	Moderately Rapid	Very Rapid
Hydrologic Soil Group	B	A
Permeability Class	Moderately Slow to Moderately Rapid	Very Rapid
Erosion Hazard, Maximum	Moderate	
Erosion Factor (K)	.17	
Drainage Class	Moderately Well	
Soil Manageability		
Class	2ep	3P
Group	II	III
Range Type	Conifer (6)	Barren & Waste (7)
Range Site	IX	
Annual Forage (lb/acre)	250-750	2
Forest Survey Site Class	4	7
Relative Chance of Seedling Survival	Very Low	N/A
AASHTO: Surface	A-2-4	A-1
Subsurface	A-4	A-1
Unified: Surface	SM	GP, GW
Subsurface	ML	GM, GC
Inclusions:	25% Soils formed in recent water-deposited sediments are present on floodplains and alluvial fan footslopes; soils with a clay increase in the subsoil; soils with a clay increase in a thick reddish subsoil on remnants of dissected alluvial fans.	

116 Coboc-Holland families association, 2 to 15 percent slopes

Elevation: 1,200 to 2,000 feet Annual Precipitation: 30 to 50 inches

Soil Map Unit Components

Coboc family

Holland family

Approximate Proportion

60%

20%

Landscape Position

High terraces.

Low and intermediate terraces.

Slope

2 to 15 percent

2 to 15 percent

Typical Vegetation

Mixed conifer forest with black oak, madrone, and some white oak.

Mixed conifer forest with black oak, madrone.

Soil Profile Description

Surface Layer

0-6 inches. Brown gravelly loam; massive; slightly acid.

0-8 inches. Pink very gravelly loam; weak fine subangular blocky structure; medium acid.

Subsoil

6-60+ inches. Yellowish red gravelly clay loam; moderate very fine and fine subangular blocky structure; medium acid.

8-60+ inches. Reddish yellow gravelly clay loam; moderate medium subangular blocky structure; strongly acid.

Substratum or Parent Material

60+ inches. Weathered alluvium.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

Greater than 60 inches in weathered alluvium.

Greater than 60 inches in alluvium.

Available Water Capacity

Total

6.6

6.6

Upper 20 inches

2.5

2.3

Infiltration Rate

Moderate

Moderate

Hydrologic Soil Group

B

B

Permeability Class

Slow to Moderately Slow

Moderately Slow

Erosion Hazard, Maximum

High

Moderate

Erosion Factor (K)

.24

.10

Drainage Class

Well

Well

Soil Manageability

Class

3Ep

2ep

Group

III

II

Range Type

Conifer (6)

Conifer (6)

Range Site

IX

IX

Annual Forage (lb/acre)

250-750

250-750

Forest Survey Site Class

3

3

Relative Chance of Seedling Survival

Low

Low

AASHTO: Surface
Subsurface

A-4

A-4

A-6

A-7

Unified: Surface
Subsurface

ML-CL

ML

CL

MH

Inclusions:

20% Soils with a slight clay increase and color change in the subsoil are present on low terraces; hydraulic mine tailings

117 Deadfall family-Lithic Cryoborolls association, 30 to 70 percent slopes

Soil Map Unit Components	Elevation: 6,200 to 8,900 feet	Annual Precipitation: 50 to 80 inches	
	Deadfall family	Lithic Cryoborolls	
	Approximate Proportion	50%	30%
	Landscape Position	Mountain sideslopes, especially upper slopes and ridges.	Mountain sideslopes and cirque sidewalls.
	Slope	30 to 70 percent	30 to 70 percent
Typical Vegetation	Jeffrey pine, mountain hemlock, red fir, western white pine, beargrass, phlox, perennial bunchgrass.	Jeffrey pine, western white pine, beargrass, phlox, buckwheat, perennial bunchgrass.	

Soil Profile Description

Surface Layer	0-6 inches. Pale brown very gravelly sandy loam; moderate very fine and fine granular structure; slightly acid.	0-10 inches. Brown very gravelly loam; weak fine granular structure; strongly acid.
Subsoil		10-18 inches. Yellowish brown very gravelly fine sandy loam; massive; medium acid.
Substratum or Parent Material	6-24 inches. Yellowish brown very gravelly sandy loam; weak very fine granular structure; neutral.	18+ inches. Hard serpentinitic rock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-40 inches. Serpentinized peridotite, dunite.	Less than 20 inches. Serpentinized rock.
Available Water Capacity		
Total	0.8-1.1	1.5
Upper 20 inches	1.0	1.5
Infiltration Rate	Rapid	Moderate
Hydrologic Soil Group	A	D
Permeability Class	Moderately Rapid to Rapid	Moderate to Moderately Rapid
Erosion Hazard, Maximum	Moderate	High
Erosion Factor (K)	.10	.10
Drainage Class	Well	Somewhat Excessively
Soil Manageability		
Class	3ePX	3EdX
Group	III	III
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	150-550	150-550
Forest Survey Site Class	5	6 to 7
Relative Chance of Seedling Survival	Very Low	Low
AASHTO: Surface	A-2-4	A-4
Subsurface	A-1	A-4
Unified: Surface	SM	ML
Subsurface	GP, GW	SM
Inclusions:	20% Wet areas and meadows; rock outcrop; shallow soils similar to Deadfall family; deep soils similar to Lithic Cryoborolls.	

118 Deadwood-Clallam deep families association, 50 to 90 percent slopes

Soil Map Unit Components	Elevation: 500 to 5,000 feet	Annual Precipitation: 45 to 75 inches
	Deadwood family	Clallam family, deep
	Approximate Proportion	60% 25%
	Landscape Position	Mountain sideslopes and narrow ridges. Mountain sideslopes and colluvial footslopes.
	Slope	50 to 90 percent 50 to 90 percent
Typical Vegetation	Canyon live oak, madrone, Douglas-fir, sugar pine, poison oak, modesty flower, bracken fern.	Douglas-fir, sugar pine, tanoak, madrone, longleaf mahonia, modesty flower, deerbrush, bluegrass, bracken fern.
Soil Profile Description		
Surface Layer	0-2 inches. Grayish brown extremely gravelly loam; strong very fine granular structure; medium acid.	0-7 inches. Grayish brown very gravelly loam; strong very fine granular structure; slightly acid.
Subsoil	2-10 inches. Light gray extremely gravelly loam; weak very fine and fine subangular blocky structure; medium acid.	7-30 inches. Light yellowish brown very gravelly clay loam; weak fine subangular blocky structure; medium acid.
Substratum or Parent Material	10-16 inches. Light gray extremely gravelly loam; massive; medium acid.	30-42 inches. Very pale brown very gravelly clay loam; massive; medium acid.
Soil Qualities and Management Interpretations		
Soil Depth and Parent Material	Less than 20 inches. Metamorphic rock.	40-60 inches. Fractured metamorphic rock.
Available Water Capacity		
Total	1.6 Max	3.3-5.1
Upper 20 inches	1.6	1.7
Infiltration Rate	Moderate	Moderate
Hydrologic Soil Group	C	B
Permeability Class	Moderately Rapid	Moderately Slow
Erosion Hazard, Maximum	High	High
Erosion Factor (K)	.10	.10
Drainage Class	Well	Well
Soil Manageability		
Class	4Edx	4Epx
Group	IV	IV
Range Type	Broadleaf Trees (10)	Broadleaf Trees (10)
Range Site	VI	VI
Annual Forage (lb/acre)	2	2
Forest Survey Site Class	4 to 5	3
Relative Chance of Seedling Survival	Low to Very Low	Moderate
AASHTO: Surface	A-4	A-4
Subsurface	A-4	A-4
Unified: Surface	GM	GM
Subsurface	GM	GM
Inclusions:	15% Rock outcrop; soils similar to Deadwood family, without the slight clay increase or color change; Skalan family.	

119 Deadwood family-Rock outcrop association, 50 to 90 percent slopes

Soil Map Unit Components	Elevation: 1,500 to 5,000 feet	Annual Precipitation: 50 to 80 inches
Approximate Proportion	Deadwood family 50%	Rock outcrop 35%
Landscape Position	Mountain sideslopes and narrow ridges.	
Slope	50 to 90 percent	
Typical Vegetation	Canyon live oak, madrone, poison oak, snowberry, Douglas-fir, sword fern, and grasses.	

Soil Profile Description

Surface Layer	0-2 inches. Grayish brown extremely gravelly loam; strong very fine granular structure; medium acid.
Subsoil	2-16 inches. Light gray extremely gravelly loam; weak very fine and fine subangular blocky structure; medium acid.
Substratum or Parent Material	16+ inches. Highly fractured hard metamorphic bedrock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	Less than 20 inches. Highly fractured schist.	
Available Water Capacity		
Total	1.6-Max.	
Upper 20 inches	1.6	
Infiltration Rate	Moderate	
Hydrologic Soil Group	C	
Permeability Class	Moderate	
Erosion Hazard, Maximum	High	
Erosion Factor (K)	.10	
Drainage Class	Somewhat Excessively	
Soil Manageability		
Class	4EPX	
Group	IV	
Range Type	Broadleaf Trees (10)	Waste & Barren (7)
Range Site	VI	none
Annual Forage (lb/acre)	210-350	2
Forest Survey Site Class	5	
Relative Chance of Seedling Survival	Low to Very Low	
AASHTO: Surface	A-4	
Subsurface	A-4	
Unified: Surface	GM	
Subsurface	GM	
Inclusions:	15% Lithic Xerumbrepts; Clallam family; Gilligan family; Chawanakee family.	

120 Deetz family, 2 to 15 percent slopes

Elevation: 4,200 to 4,600 feet Annual Precipitation: 25 to 35 inches

Deetz family

Soil Map Unit Components

Approximate Proportion

80%

Landscape Position

Glacial outwash fans and plains.

Slope

2 to 15 percent

Typical Vegetation

Ponderosa pine, manzanita, squaw carpet, bitterbrush, grasses, and forbs.

Soil Profile Description

Surface Layer

0-7 inches. Very dark grayish brown gravelly loamy fine sand; weak fine granular structure; medium acid.

Subsoil

Substratum or Parent Material

7-65+ inches. Pale brown to gray very gravelly loamy sand to sand; massive to single grain; medium acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

60+ inches. Ash over volcanic flow rocks.

Available Water Capacity

Total

3.7

Upper 20 inches

1.3

Infiltration Rate

Moderately Rapid

Hydrologic Soil Group

B

Permeability Class

Rapid

Erosion Hazard, Maximum

Moderate

Erosion Factor (K)

.24

Drainage Class

Somewhat Excessively

Soil Manageability

Class

3Xe

Group

III

Range Type

Browse-Mtn Shrub (5) and Chaparral

Range Site

IX

Annual Forage (lb/acre)

160-500

Forest Survey Site Class

4

Relative Chance of Seedling Survival

Very Low

AASHTO: Surface Subsurface

A-4

A-4

Unified: Surface Subsurface

ML

ML

Inclusions:

20% Rock outcrop; Soils similar to Deetz family with a higher percent base saturation.

121 De Masters-Smarts families association, 9 to 50 percent slopes

Soil Map Unit Components	Elevation: 4,500 to 6,800 feet	Annual Precipitation: 20 to 40 inches
	De Masters family	Smarts family
	Approximate Proportion	
	Landscape Position	
	Slope	
Typical Vegetation	White fir, red fir, ponderosa pine, Douglasfir, incense cedar, snowberry, deerbrush, squaw carpet, Idaho fescue, bottlebrush squirreltail.	Red fir, white fir, incense cedar, squaw carpet, bottlebrush squirreltail, Idaho fescue.

Soil Profile Description

Surface Layer	0-5 inches. Dark brown loam; moderate fine granular structure; neutral.	0-2 inches. Dark yellowish brown loam; moderate very fine granular structure; medium acid.
Subsoil	5-47 inches. Brown gravelly loam; weak fine subangular blocky structure; slightly acid.	2-44 inches. Brown very cobbly clay loam; moderate medium subangular blocky structure; slightly acid.
Substratum or Parent Material	47+ inches. Highly fractured tuff, breccia or andesite.	44+ inches. Hard, weathered tuff, basalt or andesite.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40-60 inches. Fractured tuff, breccia, andesite.	40-60+ inches. Weathered tuff, basalt, andesite.
Available Water Capacity		
Total	4.2-6.6	4.1-6.1
Upper 20 inches	2.6	2.0
Infiltration Rate	Moderate	Moderate
Hydrologic Soil Group	B	B
Permeability Class	Moderately Slow to Moderate	Moderately Slow to Moderately Rapid
Erosion Hazard, Maximum	Moderate	High
Erosion Factor (K)	.28	.24
Drainage Class	Well	Well
Soil Manageability		
Class	2e	3E
Group	II	III
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	250-750	250-750
Forest Survey Site Class	3 to 4	3 to 4
Relative Chance of Seedling Survival	Moderate	Low
AASHTO:		
Surface	A-4	A-4
Subsurface	A-4	A-6
Unified:		
Surface	ML	ML
Subsurface	ML	ML-CL
Inclusions:	25% Soils similar to De Masters and Smarts families with a thinner dark surface horizon; rock outcrop.	

122 Dubakella family, 30 to 70 percent slopes

Elevation: 2,000 to 5,200 feet Annual Precipitation: 30 to 80 inches

Dubakella family

Soil Map Unit Components	
Approximate Proportion	70%
Landscape Position	Mountain sideslopes and ridges.
Slope	30 to 70 percent
Typical Vegetation	Douglas-fir, Jeffrey pine, incense cedar, sugar pine, white oak, Idaho fescue.

Soil Profile Description

Surface Layer	0-12 inches. Reddish brown silt loam; weak fine and very fine granular structure; neutral.
Subsoil	12-33 inches. Reddish brown very gravelly clay loam or very cobbly clay; moderate coarse subangular blocky structure; neutral.
Substratum or Parent Material	33-36 inches. Light yellowish brown cobbly silty clay loam; massive; neutral.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-60 inches. Hard serpentinitic bedrock.
Available Water Capacity	
Total	3.2-8.5
Upper 20 inches	2.2
Infiltration Rate	Moderate
Hydrologic Soil Group	C
Permeability Class	Moderately Slow to Slow
Erosion Hazard, Maximum	High
Erosion Factor (K)	.43
Drainage Class	Well
Soil Manageability	
Class	3Ep
Group	III
Range Type	Conifer (6)
Range Site	IX
Annual Forage (lb/acre)	150-550
Forest Survey Site Class	3 to 4
Relative Chance of Seedling Survival	High to Moderate
AASHTO: Surface	A-4
Subsurface	A-7
Unified: Surface	ML-CL
Subsurface	CH
Inclusions:	30% Rock outcrop; Olete and Weitchpec families; shallow soils similar to Olete and Weitchpec families.

123 Endlich-Buell families association, 15 to 70 percent slopes

Soil Map Unit Components	Elevation: 6,200 to 8,000 feet Annual Precipitation: 70 to 90 inches		
	Endlich family	Buell family	
	Approximate Proportion	70% 20%	
	Landscape Position	Mountain sideslopes.	Periglacial sideslopes.
	Slope	30 to 70 percent	15 to 50 percent
Typical Vegetation	Red fir, mountain hemlock, western white pine, pussy paws, Pyrola, Chimaphila.	Penstemon, lupine, aster, knotweed, yarrow, fescue, brome, blue wildrye, red fir, brewer spruce, whitebark pine, mountain hemlock.	

Soil Profile Description

Surface Layer	0-4 inches. Dark brown loam; weak medium granular structure; extremely acid.	0-7 inches. Brown gravelly loam; massive; very strongly acid.
Subsoil	4-21 inches. Yellowish brown very gravelly to extremely cobbly fine sandy loam; weak fine granular structure to massive; strongly to very strongly acid.	7-16 inches. Yellowish brown very gravelly loam; massive; very strongly acid.
Substratum or Parent Material	21-48+ inches. Light yellowish brown extremely cobbly loamy fine sand; massive; very strongly acid.	16-60+ inches. Light yellowish brown very gravelly loam; massive; very strongly acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40-60+ inches. Fractured metamorphic rock.	60+ inches in glacial till.
Available Water Capacity		
Total	2.0-3.0	6.6+
Upper 20 inches	1.3	1.9
Infiltration Rate	Moderate	Moderate
Hydrologic Soil Group	B	B
Permeability Class	Moderate to Moderately Rapid	Moderate
Erosion Hazard, Maximum	Moderate to High	Moderate to High
Erosion Factor (K)	.32	.24
Drainage Class	Well	Well
Soil Manageability		
Class	3ep	2ep
Group	III	II
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	150-550	250-750
Forest Survey Site Class	4	4
Relative Chance of Seedling Survival	Low	Moderate
AASHTO:		
Surface	A-4	A-4
Subsurface	A-1	A-4
Unified:		
Surface	ML,CL-ML	SM,GM,SM-SC
Subsurface	GM	SM,GM,SM-SC
Inclusions:	10% Teewinot family, and rock outcrop	

124 Entic Xerumbrepts-Gerle family association, 30 to 90 percent slopes

Soil Map Unit Components		Elevation: 4,800 to 6,800 feet	Annual Precipitation: 50 to 100 inches
Approximate Proportion		Entic Xerumbrepts	Gerle family
Landscape Position		60%	25%
Slope		Mountain sideslopes.	Mountain sideslopes and footslopes.
Typical Vegetation		30 to 90 percent	30 to 90 percent
		Greenleaf manzanita, snowbrush, huckleberry oak, bittercherry, true fir.	True fir forest with some mountain hemlock.
Soil Profile Description			
Surface Layer		0-5 inches. Grayish brown gravelly loam; moderate fine granular structure; strongly acid.	0-11 inches. Very dark grayish brown gravelly fine sandy loam; weak very fine granular structure; slightly acid.
Subsoil		5-14 inches. Pale brown gravelly loamy sand; weak fine granular structure; medium acid.	11-20 inches. Light yellowish brown gravelly fine sandy loam; massive; strongly acid.
Substratum or Parent Material		14+ inches. Soft weathered granitic rock.	20-35 inches. Light gray very gravelly fine sand; massive; strongly acid.
Soil Qualities and Management Interpretations			
Soil Depth and Parent Material		Less than 20 inches. Weathered granitic rock.	20-40 inches. Soft, weathered granitic rock.
Available Water Capacity			
Total		0.8-1.1	1.6-2.6
Upper 20 inches		1.0	1.8
Infiltration Rate		Rapid	Moderate
Hydrologic Soil Group		C	B
Permeability Class		Moderate to Rapid	Moderate to Rapid
Erosion Hazard, Maximum		High	High
Erosion Factor (K)		.05	.10
Drainage Class		Well to Excessively	Well
Soil Manageability			
Class		3EPx	3Epx
Group		III	III
Range Type		Browse-Mtn Shrub (5)	Conifer (6)
Range Site		VI	IX
Annual Forage (lb/acre)		100-250	150-550
Forest Survey Site Class		4	3 to 4
Relative Chance of Seedling Survival		Very Low	Low
AASHTO: Surface		A-2-4	A-4
Subsurface		A-4	A-2-4
Unified: Surface		SM	SM
Subsurface		SM	SM
Inclusions:		15% Rock outcrop, Lithic Xerumbrepts on narrow and very steep sideslopes.	

125 Entic Xerumbrepts-Gerle family-Tallac family association, 15 to 50 percent slopes

Elevation: 4,800 to 6,800 feet Annual Precipitation: 50 to 80 inches

Map Unit Components	Entic Xerumbrepts	Gerle family	Tallac family
Approx. Proportion	40%	40%	10%
Landscape Position	Mountain sideslopes, especially upper slopes.	Mountain sideslopes and ridges.	Mountain sideslopes, upperslopes and ridges.
Slope	30 to 50 percent	15 to 50 percent	15 to 20 percent
Typical Vegetation	Sparse true fir forest or dense brush fields (greenleaf manzanita, snowbrush, bittercherry, huckleberry oak).	True fir forest and mountain hemlock.	True fir, with some mixed conifer amidst brush (greenleaf manzanita, snowbrush, squaw carpet.

Soil Profile Description

Surface Layer	0-5 inches. Very dark grayish brown gravelly loam; moderate fine granular structure; strongly acid.	0-11 inches. Very dark grayish brown gravelly fine sandy loam; weak very fine granular structure; slightly acid.	0-3 inches. Very dark grayish brown loam; weak fine granular structure; medium acid.
Subsoil	5-14 inches. Pale brown gravelly loamy sand; weak fine granular structure;	11-20 inches. Light yellowish brown gravelly fine sandy loam to very gravelly fine sand; massive; strongly acid.	3-25 inches. Dark grayish brown sandy loam; weak medium granular structure; slightly acid.
Substratum or Parent Material	14+ inches. Soft weathered granodiorite.	20-35 inches. Light gray gravelly fine sand; massive; strongly acid.	25+ inches. Soft weathered granitic rock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	Less than 20 inches. weathered granodiorite.	20-40 inches. Soft, weathered granitic rock.	20-60 inches. Soft, weathered granitic rock.
Available Water Capacity			
Total	0.8-1.1	1.6-2.6	2.6-6.7
Upper 20 inches	1.0	1.8	1.4
Infiltration Rate	Rapid	Moderate	Moderate
Hydrologic Soil Group	C	B	B
Permeability Class	Moderate to Rapid	Moderate to Rapid	Moderate to Moderately Rapid
Max. Erosion Hazard	Moderate to High	Moderate	Moderate
Erosion Factor (K)	.05	.10	.20
Drainage Class	Well to Excessively	Well	Well
Soil Manageability			
Class	3Pex	2epx	2ex
Group	III	II	II
Range Type	Browse-Mtn Shrub (5)	Conifer (6)	Conifer (6)
Range Site	VI	IX	IX
Annual Forage (lb/acre)	160-500	250-750	250-750
Survey Site Class	4	3 to 4	3 to 4
Relative Chance of Seedling Survival	Very Low	Low	Moderate
AASHTO:			
Surface	A-2-4	A-4	A-4
Subsurface	A-2-4	A-2-4	A-2-4
Unified:			
Surface	SM	SM	ML
Subsurface	SM	SM	SM

Inclusions: 10% Rock outcrop; Lithic Xerumbrepts; poorly or somewhat poorly drained soils formed in recent water-deposited sediments are present in meadows and wet areas.

126 Etchen-Neuske families complex, 9 to 30 percent slopes

Soil Map Unit Components	Elevation: 4,600 to 6,000 feet Annual Precipitation: 12 to 20 inches	
	Etchen family	Neuske family
	Approximate Proportion	50% 35%
	Landscape Position	Mountain footslopes. Mountain sideslopes and footslopes.
	Slope	9 to 30 percent 9 to 30 percent
Typical Vegetation	Ponderosa pine, juniper, bitterbrush, Parry rabbitbrush, bottlebrush squirreltail, mountain mahogany.	
Soil Profile Description		
Surface Layer	0-9 inches. Light brownish gray sandy loam; moderate medium platy structure; neutral.	0-8 inches. Brown loam; weak very fine granular structure; slightly acid.
Subsoil	9-40 inches. Pale brown loam; moderate coarse subangular blocky structure; slightly acid.	8-27 inches. Brown loam; weak to moderate fine and medium subangular blocky structure; slightly acid.
Substratum or Parent Material	40+ inches. Hard, fractured andesite or basalt.	27-45 inches. Yellowish brown loam; weak medium subangular blocky structure; slightly acid.
Soil Qualities and Management Interpretations		
Soil Depth and Parent Material	40-60+ inches. Fractured andesite or basalt.	20-60 inches. Fractured andesite or basalt.
Available Water Capacity	Total	3.2-4.0 2.8-8.4
	Upper 20 inches	2.6 2.8
Infiltration Rate	Moderately Rapid	Moderate
Hydrologic Soil Group	B	B
Permeability Class	Moderately Slow to Moderately Rapid	Moderately Slow to Moderate
Erosion Hazard, Maximum	Moderate	High
Erosion Factor (K)	.28	.24
Drainage Class	Well	Well
Soil Manageability	Class	2epx 3Epx
	Group	II III
Range Type	Conifer (6)	Conifer (6)
Range Site	III	III
Annual Forage (lb/acre)	250-750	250-750
Forest Survey Site Class	7	5 to 7
Relative Chance of Seedling Survival	Low	Low
AASHTO:	Surface	A-4
	Subsurface	A-2-6
Unified:	Surface	SM
	Subsurface	SC
Inclusions:	15% Rock outcrop, soils lacking a dark surface horizon, and soils with a very low bulk density.	

127 Gerle family-Entic Xerumbrepts association, 50 to 90 percent slopes

Soil Map Unit Components	Elevation: 4,800 to 6,800 feet	Annual Precipitation: 50 to 75 inches
	Gerle family	Entic Xerumbrepts
	Approximate Proportion	
	60%	30%
	Landscape Position	Mountain sideslopes.
Slope	50 to 90 percent	50 to 90 percent
Typical Vegetation	True fir forest.	Greenleaf manzanita, snowbrush, bittercherry, huckleberry oak, true fir.

Soil Profile Description

Surface Layer	0-11 inches. Very dark grayish brown gravelly fine sandy loam; weak very fine granular structure; slightly acid.	0-5 inches. Grayish brown gravelly loam; moderate fine granular structure; strongly acid.
Subsoil	11-20 inches. Light yellowish brown gravelly fine sandy loam; massive; strongly acid.	5-14 inches. Pale brown gravelly loamy sand; weak fine gravelly structure; medium acid.
Substratum or Parent Material	20-35 inches. Light gray very gravelly fine sand; massive; strongly acid.	14+ inches. Soft weathered granitic rock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-40 inches. Soft, weathered granitic rock.	Less than 20 inches. Weathered granitic rock.
Available Water Capacity		
Total	1.6-2.2	0.9-1.2
Upper 20 inches	1.8	1.0
Infiltration Rate	Moderate	Rapid
Hydrologic Soil Group	B	B
Permeability Class	Moderate to Rapid	Moderate to Rapid
Erosion Hazard, Maximum	High	High
Erosion Factor (K)	.10	.05
Drainage Class	Well	Well to Excessively
Soil Manageability		
Class	4EPx	4EPx
Group	IV	IV
Range Type	Conifer (6)	Browse-Mtn Shrub (5)
Range Site	IX	VI
Annual Forage (lb/acre)	150-550	150-450
Forest Survey Site Class	4	5
Relative Chance of Seedling Survival	Low	Very Low
AASHTO: Surface	A-4	A-2-4
Subsurface	A-3	A-2-4
Unified: Surface	SM	SM
Subsurface	SP-SM	SM
Inclusions:	10% Rock outcrop, Lithic Xerumbrepts on narrow ridges and very steep sideslopes, Tallac family.	

128 Gilligan-Chawanakee families association, 30 to 90 percent slopes

Soil Map Unit Components	Elevation: 1,500 to 5,000	Annual Precipitation: 40 to 70 inches	
	Gilligan family	Chawanakee family	
	Approximate Proportion	40%	35%
	Landscape Position	Mountain sideslopes.	Narrow ridges and mountain sideslopes.
	Slope	30 to 90 percent	30 to 90 percent
Typical Vegetation	Douglas-fir, madrone, canyon live oak, California black oak, mountain dogwood, rose, currant, sword fern.	Ponderosa pine, Douglasfir, sugar pine, canyon live oak, California black oak, deerbrush, whiteleaf manzanita.	

Soil Profile Description

Surface Layer	0-11 inches. Grayish brown sandy loam; weak fine granular structure; neutral.	0-1 inches. Brown loam; moderate fine granular structure; strongly acid.
Subsoil	11-29 inches. Light gray fine sandy loam; weak fine subangular blocky structure to massive; medium acid.	1-15 inches. Strong brown sandy loam to gravelly sandy loam; moderate fine subangular blocky structure; medium acid.
Substratum or Parent Material	29-47 inches. White fine sandy loam; massive; medium acid.	15+ inches. Soft decomposed granitic rock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40-60 inches. Soft decomposed granitic rock.	10-19 inches. Soft decomposed granitic rock.
Available Water Capacity		
Total	4.3-6.5	1.0-1.9
Upper 20 inches	2.1	1.5
Infiltration Rate	Moderately Rapid	Moderate
Hydrologic Soil Group	B	C
Permeability Class	Moderate to Moderately Rapid	Moderate to Moderately Rapid
Erosion Hazard, Maximum	High	High
Erosion Factor (K)	.20	.37
Drainage Class	Somewhat Excessively	Somewhat Excessively
Soil Manageability		
Class	3Epx	3EPx
Group	III	III
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	150-550	150-550
Forest Survey Site Class	3	4 to 5
Relative Chance of Seedling Survival	Moderate	Low to Very Low
AASHTO: Surface	A-2-4	A-4
Subsurface	A-4	A-2-4
Unified: Surface	SM	ML
Subsurface	SM	SM
Inclusions:	25% Rock outcrop, Lithic Xerorthents, granitic.	

129 Gilligan-Goldridge families association, 30 to 90 percent slopes

Soil Map Unit Components	Elevation: 2,000 to 4,500 feet Annual Precipitation: 45 to 65 inches	
	Gilligan family	Goldridge family
Approximate Proportion	70%	20%
Landscape Position	Mountain sideslopes.	Mountain sideslopes and ridges.
Slope	50 to 90 percent	30 to 50 percent
Typical Vegetation	Douglas-fir, madrone, California black oak, canyon live oak, mountain dogwood, California hazelnut, rose, currant.	Douglas-fir, tanoak, giant chinquapin, madrone, Oregon grape, deerbrush.

Soil Profile Description

Surface Layer	0-11 inches. Grayish brown sandy loam; weak fine granular structure; neutral.	0-4 inches. Strong brown very gravelly loam; strong very fine granular structure; slightly acid.
Subsoil	11-29 inches. Light gray fine sandy loam; weak fine subangular blocky structure to massive; medium acid.	4-41 inches. Reddish yellow gravelly clay loam; moderate medium subangular blocky structure; medium acid.
Substratum or Parent Material	29-47 inches. White fine sandy loam; massive; medium acid.	41-80+ inches. Yellow loam; massive; strongly acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40-60 inches. Soft decomposed granitic rock.	60+ inches. Weathered diorite or granodiorite.
Available Water Capacity		
Total	4.3-6.5	8.0
Upper 20 inches	2.1	2.9
Infiltration Rate	Moderately Rapid	Moderate
Hydrologic Soil Group	B	B
Permeability Class	Moderate to Moderately Rapid	Moderately Slow
Erosion Hazard, Maximum	Moderate	High
Erosion Factor (K)	.32	.20
Drainage Class	Somewhat Excessively	Well
Soil Manageability		
Class	4epx	4Epx
Group	IV	IV
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	150-550	250-750
Forest Survey Site Class	2 to 3	1 to 2
Relative Chance of Seedling Survival	Moderate	High to Moderate
AASHTO: Surface	A-2-4	A-4
Subsurface	A-4	A-6
Unified: Surface	SM	ML-CL
Subsurface	SM	ML-CL
Inclusions:	10% Soils similar to Deadwood on granitic rock, on narrow ridges and very steep sideslopes; rock outcrop.	

130 Gilligan-Holland families association, 15 to 70 percent slopes

Soil Map Unit Components	Elevation: 2,000 to 5,000 feet Annual Precipitation: 30 to 50 inches	
	Gilligan family	Holland family
	70%	20%
	Mountain sideslopes.	Broad ridges and mountain sideslopes.
Landscape Position	50 to 70 percent	15 to 50 percent
Slope	Douglas-fir, madrone, canyon live oak, black oak, dogwood, snowberry hazelnut, rose, currant Pacific trillium, sword fern.	Douglas-fir, ponderosa pine, sugar pine, incense cedar, black oak, deerbrush, madrone, whiteleaf manzanita, poison oak, snowberry, grasses, bracken fern.
Typical Vegetation	Soil Profile Description	
Surface Layer	0-11 inches. Grayish brown sandy loam; weak fine granular structure; neutral.	0-8 inches. Pink very gravelly loam; weak fine subangular blocky structure; medium acid.
Subsoil	11-29 inches. Light gray fine sandy loam; weak fine subangular blocky structure to massive; medium acid.	8-60+ inches. Reddish yellow gravelly clay loam; moderate medium subangular blocky structure; strongly acid.
Substratum or Parent Material	29-47 inches. White fine sandy loam; massive; medium acid.	
Soil Qualities and Management Interpretations		
Soil Depth and Parent Material	40-60 inches. Disintegrated granitic rock.	40-60+ inches. Disintegrated granitic rock.
Available Water Capacity		
Total	4.1-6.1	4.7-6.6
Upper 20 inches	2.1	2.3
Infiltration Rate	Moderately Rapid	Moderate
Hydrologic Soil Group	B	B
Permeability Class	Moderate to Moderately Rapid	Moderately Slow
Erosion Hazard, Maximum	High	High
Erosion Factor (K)	.28	.17
Drainage Class	Somewhat Excessively	Well
Soil Manageability		
Class	4Epx	3Epx
Group	IV	III
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	150-550	250-750
Forest Survey Site Class	3 to 4	3
Relative Chance of Seedling Survival	Moderate	Low
AASHTO: Surface	A-2-4	A-4
Subsurface	A-4	A-7
Unified: Surface	SM	ML
Subsurface	SM	MH
Inclusions:	10% Soils similar to Deadwood on granitic rock, present on narrow ridges and very steep sideslopes; rock outcrop; Lithic Xerorthents, granitic.	

131 Goldridge family, gravelly, 15 to 50 percent slopes

Elevation: 1,000 to 4,500 feet Annual Precipitation: 50 to 80 inches
Goldridge family, gravelly

Soil Map Unit Components

Approximate Proportion

70%

Landscape Position

Landslide deposits.

Slope

15 to 50 percent

Typical Vegetation

Douglas-fir, sugar pine, tanoak, madrone, California, black oak, bigleaf maple, deerbrush, poison oak, thimbleberry, iris, bracken fern.

Soil Profile Description

Surface Layer

0-4 inches. Strong brown very gravelly loam; strong very fine granular structure; slightly acid.

Subsoil

4-60+ inches. Reddish yellow gravelly clay loam; moderate medium subangular blocky structure; medium acid.

Substratum or Parent Material

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

60+ inches. Metamorphic rock.

Available Water Capacity

Total

8.2

Upper 20 inches

2.0

Infiltration Rate

Moderate

Hydrologic Soil Group

B

Permeability Class

Moderately Slow to Moderate

Erosion Hazard, Maximum

Moderate

Erosion Factor (K)

.10

Drainage Class

Well

Soil Manageability

Class

2ep

Group

II

Range Type

Conifer (6)

Range Site

IX

Annual Forage (lb/acre)

250-750

Forest Survey Site Class

1 to 2

Relative Chance of Seedling Survival

Moderate

AASHTO: Surface Subsurface

A-4

A-6

Unified: Surface Subsurface

ML-CL

CL

Inclusions:

30% Clallam family on mixed colluvium; Guemes, Olete, and Weitchpec families on serpentinitic colluvium.

132 Goldridge, gravelly-Clallam, deep-Prather families association, 30 to 70 percent slopes

Elevation: 1,000 to 4,500 feet Annual Precipitation: 50 to 80 inches

Map Unit Components	Goldridge family, gravelly	Clallam family, deep	Prather family
Approx. Proportion	50%	25%	20%
Landscape Position	Broad ridges and mountain sideslopes.	Mountain sideslopes.	Landslide deposits.
Slope	30 to 50 percent	50 to 70 percent	30 to 50 percent
Typical Vegetation	Douglas-fir, sugar pine, tanoak, madrone, black oak, bigleaf maple, deerbrush, poison oak, bunchberry, bracken fern.	Douglas-fir, sugar pine, tanoak, madrone, longleaf mahonia, modesty flower, deerbrush, bluegrass, bracken fern.	Douglas-fir, sugar pine, tanoak, chinquapin, madrone, dogwood, snowberry, Oregon grape, poison oak, rose.

Soil Profile Description

Surface Layer	0-4 inches. Strong brown very gravelly loam; strong very fine granular structure; slightly acid.	0-7 inches. Grayish brown very gravelly loam; strong very fine granular structure; slightly acid.	0-4 inches. Reddish brown gravelly loam; strong very fine granular structure; slightly acid.
Subsoil	4-60+ inches. Reddish yellow gravelly clay loam; moderate medium subangular blocky structure; medium acid.	7-30 inches. Light yellowish brown very gravelly clay loam; weak fine subangular blocky structure; medium acid.	4-79 inches. Red clay loam; moderate fine subangular blocky structure; slightly acid.
Substratum or Parent Material		30-42 inches. Very pale brown very gravelly clay loam; massive; medium acid.	

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	60+ inches. Metamorphic rock.	40-60 inches. Fractured metamorphic rock.	60+ inches. Metamorphic bedrock.
Available Water Capacity			
Total	7.6	3.3-5.1	10.5
Upper 20 inches	2.0	1.7	3.0
Infiltration Rate	Moderate	Moderate	Moderately Rapid
Hydrologic Soil Group	B	B	B
Permeability Class	Moderately Slow to Moderate	Moderately Slow	Moderately Slow
Max. Erosion Hazard	Moderate	Moderate	Moderate
Erosion Factor (K)	.10	.10	.15
Drainage Class	Well	Well	Well
Soil Manageability			
Class	3ep	4ep	3e
Group	III	IV	III
Range Type	Conifer (6)	Conifer (6)	Conifer (6)
Range Site	IX	IX	IX
Annual Forage (lb/acre)	250-750	150-550	250-750
Forest Survey Site Class	2 to 3	3	1 to 2
Relative Chance of Seedling Survival	Moderate	Moderate	High
AASHTO: Surface	A-4	A-4	A-4
Subsurface	A-6	A-4	A-7
Unified: Surface	GM	GM	SM,GM,SM-SC
Subsurface	SC, GC, CL	GM	CH
Inclusions:	5% Deadwood family, rock outcrop.		

133 Goldridge-Gilligan families association, 15 to 90 percent slopes

Elevation: 2,000 to 4,000 feet Annual Precipitation: 45 to 65 inches

Soil Map Unit Components

Goldridge family

Gilligan family

Approximate Proportion

75%

20%

Landscape Position Slope

Mountain ridges and steep sideslopes.

Mountain sideslopes.

15 to 50 percent

50 to 90 percent

Typical Vegetation

Douglas-fir, tanoak, giant chinquapin, madrone, Oregon grape, deerbrush.

Douglas-fir, madrone, canyon live oak, black oak, dogwood, currant, snowberry, hazelnut.

Soil Profile Description

Surface Layer

0-4 inches. Strong brown very gravelly loam; strong very fine granular structure; slightly acid.

0-11 inches. Grayish brown sandy loam; weak fine granular structure; neutral.

Subsoil

4-41 inches. Reddish yellow gravelly clay loam; moderate medium subangular blocky structure; medium acid.

11-29 inches. Light gray fine sandy loam; weak fine subangular blocky structure to massive; medium acid.

Substratum or Parent Material

41-80+ inches. Yellow loam; massive; strongly acid.

29-47 inches. White fine sandy loam; massive; medium acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

60+ inches. Weathered diorite or granodiorite.

40-60 inches. Soft, weathered granodiorite.

Available Water Capacity

Total

8.8

4.3-6.5

Upper 20 inches

2.9

2.1

Infiltration Rate

Moderate

Moderately Rapid

Hydrologic Soil Group

B

B

Permeability Class

Moderately Slow

Moderate to Moderately Rapid

Erosion Hazard, Maximum

High

Moderate

Erosion Factor (K)

.20

.32

Drainage Class

Well

Somewhat Excessively

Soil Manageability

Class

3Ep

4e

Group

III

IV

Range Type

Conifer (6)

Conifer (6)

Range Site

IX

IX

Annual Forage (lb/acre)

250-750

150-550

Forest Survey Site Class

1 to 2

2 to 3

Relative Chance of Seedling Survival

High to Moderate

Moderate

AASHTO: Surface Subsurface

A-4

A-2-4

A-6

A-4

Unified: Surface Subsurface

ML-CL

SM

ML-CL

SM

Inclusions:

5% Soils similar to Deadwood family on granodiorite or diorite; rock outcrop.

134 Guemes family, 30 to 90 percent slopes.

Elevation: 1,500 to 5,000 feet Annual Precipitation: 45 to 70 inches

Guemes family

Soil Map Unit Components	
Approximate Proportion	60%
Landscape Position	Mountain sideslopes.
Slope	30 to 90 percent
Typical Vegetation	Douglas-fir, sugar pine, Jeffrey pine, incense cedar, huckleberry oak, greenleaf manzanita, snowbrush, beargrass.

Soil Profile Description

Surface Layer	0-7 inches. Light brownish gray very gravelly loam; weak fine and very fine subangular blocky structure; slightly acid.
Subsoil	7-28 inches. Very pale brown gravelly clay loam; moderate medium subangular blocky structure; neutral.
Substratum or Parent Material	28+ inches. Hard serpentinitic bedrock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-40 inches. Hard serpentinitic bedrock.
Available Water Capacity	
Total	2.3-4.9
Upper 20 inches	1.6
Infiltration Rate	Moderate
Hydrologic Soil Group	B
Permeability Class	Moderately Slow to Moderate
Erosion Hazard, Maximum	High
Erosion Factor (K)	.15
Drainage Class	Well
Soil Manageability	
Class	3Epx
Group	III
Range Type	Conifer (6)
Range Site	IX
Annual Forage (lb/acre)	150-550
Forest Survey Site Class	4
Relative Chance of Seedling Survival	Moderate to Low
AASHTO: Surface	A-4
Subsurface	A-6
Unified: Surface	ML-CL
Subsurface	CL
Inclusions:	40% Olete family; Weitchpec family; shallow soils similar to Weitchpec family; Lithic Mollic Haploxeralfs; rock outcrop.

135 Haplic Durixeralfs, 0 to 15 percent slopes

Elevation: 4,400 to 5,500 feet Annual Precipitation: 16 to 30 inches

Haplic Durixeralfs

Soil Map Unit Components

Approximate Proportion

75%

Landscape Position

Terraces.

Slope

0 to 15 percent

Typical Vegetation

Black sagebrush, greenleaf manzanita, bottlebrush squirreltail, few ponderosa pine, western juniper.

Soil Profile Description

Surface Layer

0-8 inches. Grayish brown loam; moderate fine and medium granular structure; neutral.

Subsoil

8-35 inches. Light yellowish brown loam to cemented sandy loam; moderate medium subangular blocky structure to massive; mildly to moderately alkaline.

Substratum or Parent Material

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

Less than 20 inches. Cemented pan.

Available Water Capacity

Total

2.2

Upper 20 inches

2.2

Infiltration Rate

Moderate

Hydrologic Soil Group

D

Permeability Class

Slow to Moderately Slow

Erosion Hazard, Maximum

High

Erosion Factor (K)

.37

Drainage Class

Somewhat Poorly

Soil Manageability

Class

3Epw

Group

III

Range Type

Sagebrush (4)

Range Site

IV

Annual Forage (lb/acre)

200-600

Forest Survey Site Class

7

Relative Chance of Seedling Survival

Low

AASHTO: Surface
Subsurface

A-4

A-4

Unified: Surface
Subsurface

ML

ML

Inclusions:

25% Soils lacking a cemented horizon, and some with a darkened surface horizon.

136 Haplic Durixeralfs-Morical family association, 2 to 15 percent slopes

Soil Map Unit Components	Elevation: 4,400 to 5,500 feet		Annual Precipitation: 20 to 30 inches		
	Haplic Durixeralfs		Morical family		
	Approximate Proportion		50%		
	Landscape Position		Volcanic upland flats and terraces.		
	Slope		2 to 15 percent		
Typical Vegetation		Black sagebrush, bottlebrush squirreltail, big sagebrush, bitterbrush, fescues, bluegrass, stipa, cheatgrass, forbs.		Juniper, sagebrush, rabbitbrush, annual grasses, forbs.	
Soil Profile Description					
Surface Layer		0-8 inches. Grayish brown loam; moderate fine and medium granular structure; neutral.		0-8 inches. Grayish brown gravelly sandy loam; moderate fine and very fine granular structure; neutral.	
Subsoil		8-35 inches. Light yellowish brown loam to cemented sandy loam; moderate medium subangular blocky structure to massive; mildly to moderately alkaline.		8-25 inches. Light yellowish brown sandy clay loam; weak fine angular blocky structure; slightly acid.	
Substratum or Parent Material		25+ inches. Extrusive volcanic rock.			
Soil Qualities and Management Interpretations					
Soil Depth and Parent Material		Less than 20 inches. Cemented pan in alluvium.		20-40 inches. Extrusive volcanic rock.	
Available Water Capacity					
Total		2.2		2.7-5.4	
Upper 20 inches		2.2		2.3	
Infiltration Rate		Moderate		Rapid	
Hydrologic Soil Group		D		B	
Permeability Class		Slow to Moderately Slow		Moderately Slow to Moderate	
Erosion Hazard, Maximum		High		Moderate	
Erosion Factor (K)		.37		.10	
Drainage Class		Somewhat Poorly		Well	
Soil Manageability					
Class		3Epw		2ep	
Group		III		II	
Range Type		Sagebrush (4)		Pinyon-Juniper (9)	
Range Site		IV		IV	
Annual Forage (lb/acre)		200-600		300-600	
Forest Survey Site Class		5		4 to 5	
Relative Chance of Seedling Survival		Low		Low	
AASHTO: Surface		A-4		A-2-4	
Subsurface				A-6	
Unified: Surface		ML		SM	
Subsurface				SC	
Inclusions:		15% Holland family.			

137 Helvetia family, 15 to 70 percent slopes

Elevation: 3,500 to 4,800 feet Annual Precipitation: 25 to 35 inches

Helvetia family

Soil Map Unit Components

Approximate Proportion

75%

Landscape Position

Mountain sideslopes, footslopes, broad ridges, and benches.

Slope

15 to 70 percent

Typical Vegetation

Ponderosa pine, incense cedar, Douglas-fir, canyon live oak, black oak, lupine, stipa.

Soil Profile Description

Surface Layer

0-6 inches. Brown gravelly clay loam; moderate fine granular structure; neutral.

Subsoil

6-35 inches. Yellowish brown gravelly clay loam; weak fine subangular blocky structure; slightly acid.

Substratum or Parent Material

35+ inches. Soft highly weathered schist.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

20-40 inches. Soft, highly weathered schist.

Available Water Capacity

Total

2.8-5.6

Upper 20 inches

2.7

Infiltration Rate

Slow

Hydrologic Soil Group

B

Permeability Class

Slow to Moderately Slow

Erosion Hazard, Maximum

Moderate to High

Erosion Factor (K)

.10

Drainage Class

Well

Soil Manageability

Class

3ep

Group

III

Range Type

Conifer (6)

Range Site

IX

Annual Forage (lb/acre)

250-750

Forest Survey Site Class

4

Relative Chance of Seedling Survival

High to Moderate

AASHTO: Surface Subsurface

A-6

A-7

Unified: Surface Subsurface

ML-CL

CL

Inclusions:

25% Soils similar to Helvetia family with a thicker dark surface horizon; Coboc family; Holland family.

138 Holland family, 15 to 50 percent slopes

Elevation: 2,000 to 5,000 feet Annual Precipitation: 40 to 70 inches

Holland family

Soil Map Unit Components

Approximate Proportion

70%

Landscape Position

Landslide deposits.

Slope

15 to 50 percent

Typical Vegetation

Douglas-fir, ponderosa pine, sugar pine, incense cedar, California black oak, madrone, deerbrush, white leaf manzanita, longleaf mahonia, poison oak, snowberry, rose, bracken fern.

Soil Profile Description

Surface Layer

0-8 inches. Pink very gravelly loam; weak fine subangular blocky structure; medium acid.

Substratum or Parent Material

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

40-60+ inches. Mixed landslide deposits.

Available Water Capacity

Total

4.7-6.6

Upper 20 inches

2.3

Infiltration Rate

Moderately Slow

Hydrologic Soil Group

B

Permeability Class

Moderately Slow

Erosion Hazard, Maximum

High

Erosion Factor (K)

.15

Drainage Class

Well

Soil Manageability

Class

3Ep

Group

III

Range Type

Conifer (6)

Range Site

IX

Annual Forage (lb/acre)

250-750

Forest Survey Site Class

3

Relative Chance of Seedling Survival

Moderate to Low

AASHTO: Surface
Subsurface

A-4

A-7

Unified: Surface
Subsurface

ML

MH

Inclusions:

30% Clallam family on mixed colluvium; Guemes, Olete, and Weitchpec families on serpentinitic colluvium.

139 Holland-Aiken families association, 2 to 15 percent slopes

Soil Map Unit Components

Approximate Proportion

Landscape Position

Slope

Typical Vegetation

Elevation: 700 to 1,500 feet

Holland family

50%

Low or intermediate terraces.

2 to 15 percent

Douglas-fir, sugar pine, tanoak, madrone.

Annual Precipitation: 50 to 70 inches

Aiken family

35%

High terraces.

2 to 15 percent

Douglas-fir, sugar pine, tanoak, madrone.

Soil Profile Description

Surface Layer

0-8 inches. Pink very gravelly loam; weak fine subangular blocky structure; medium acid.

0-9 inches. Reddish brown gravelly loam; weak medium granular structure; slightly acid.

Subsoil

8-60+ inches. Reddish yellow gravelly clay loam; moderate medium subangular blocky structure; strongly acid.

9-49 inches. Reddish brown gravelly clay loam; moderate very fine subangular blocky structure; slightly acid.

Substratum or Parent Material

49-67 inches. Reddish yellow silt loam; massive; slightly acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

Greater than 60 inches in alluvium.

Greater than 60 inches in alluvium.

Available Water Capacity

Total

6.6

7.9

Upper 20 inches

2.3

2.4

Infiltration Rate

Moderate

Moderate

Hydrologic Soil Group

B

B

Permeability Class

Moderately Slow

Slow to Moderately Slow

Erosion Hazard, Maximum

Moderate

Moderate

Erosion Factor (K)

.10

.15

Drainage Class

Well

Well

Soil Manageability

Class

2e

2e

Group

II

II

Range Type

Conifer (6)

Conifer (6)

Range Site

IX

IX

Annual Forage (lb/acre)

250-750

250-750

Forest Survey Site Class

3

4

Relative Chance of Seedling Survival

Moderate

Moderate

AASHTO: Surface Subsurface

A-4

A-4

A-6

A-6

Unified: Surface Subsurface

ML-CL

ML

CL

CL

Inclusions:

15% Soils with a slight clay increase and color change in the subsoil are present on low terraces; hydraulic mine tailings.

140 Holland-Aiken-Clallam, deep families complex, 15 to 70 percent slopes

Elevation: 2,000 to 5,000 feet Annual Precipitation: 60 to 90 inches

Map Unit Components	Holland family	Aiken family	Clallam family, deep
Approx. Proportion	40%	20%	20%
Landscape Position	Broad ridges and sideslopes.	Broad ridges and sideslopes.	Mountain sideslopes.
Slope	15 to 50 percent	15 to 50 percent	30 to 70 percent
Typical Vegetation	Douglas-fir, sugar pine, tanoak, madrone.	Douglas-fir, sugar pine, tanoak, madrone.	Douglas-fir, sugar pine, incense cedar, madrone, Oregon grape, deerbrush, bracken fern, grasses.

Soil Profile Description

Surface Layer	0-8 inches. Pink very gravelly loam; weak fine subangular blocky structure; medium acid.	0-9 inches. Reddish brown gravelly loam; weak medium granular structure; slightly acid.	0-7 inches. Grayish brown very gravelly loam; strong very fine granular structure; slightly acid.
Subsoil	8-60+ inches. Reddish yellow gravelly clay loam; moderate medium subangular blocky structure; strongly acid.	9-49 inches. Reddish brown gravelly clay loam; moderate very fine subangular blocky structure; slightly acid.	7-30 inches. Light yellowish brown very gravelly clay loam; weak fine subangular blocky structure; medium acid.
Substratum or Parent Material		49-67 inches. Reddish yellow silt loam; massive; slightly acid.	30-42 inches. Very pale brown very gravelly clay loam; massive; medium acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40-60+ inches. Fractured ultrabasic rock.	60+ inches. Serpentinized metamorphic rock.	40-60 inches. Metamorphic bedrock.
Available Water Capacity			
Total	5.1-6.6	7.9	3.3-5.1
Upper 20 inches	2.3	2.4	1.7
Infiltration Rate	Moderate	Moderate	Moderate
Hydrologic Soil Group	B	B	B
Permeability Class	Moderately Slow	Slow to Moderately Slow	Moderately Slow
Erosion Hazard, Maximum	Moderate to High	Moderate	Moderate
Erosion Factor (K)	.10	.15	.10
Drainage Class	Well	Well	Well
Soil Manageability			
Class	3E	2e	3ep
Group	III	II	III
Range Type	Conifer (6)	Conifer (6)	Conifer (6)
Range Site	IX	IX	IX
Annual Forage (lb/acre)	250-750	250-750	150-550
Forest Survey Site Class	3	2 to 3	3 to 4
Relative Chance of Seedling Survival	Low	Moderate	Low
AASHTO: Surface	A-4	A-4	A-4
Subsurface	A-6	A-6	A-4
Unified: Surface	ML-CL	ML	GM
Subsurface	CL	CL	GM
Inclusions:	20% Deadwood family on metamorphic rocks; Guemes, shallow soils similar to Guemes, and Mollic Haploxeralfs on serpentine.		

141 Holland-Clallam, deep-Coboc families association, 15 to 70 percent slopes

Map Unit Components	Elevation: 2,000 to 5,000 feet Annual Precipitation: 40 to 60 inches		
	Holland family	Clallam family, deep	Coboc family
Approx. Proportion	50%	25%	20%
Landscape Position	Broad ridges and mountain sideslopes.	Mountain sideslopes.	Mountain footslopes and landslide deposits.
Slope	30 to 50 percent	50 to 70 percent	15 to 50 percent
Typical Vegetation	Douglas-fir, ponderosa pine, incense cedar, black oak, madrone, deerbrush, white leaf manzanita, currant, Oregon grape, poison oak, snowberry, bracken fern.	Douglas-fir, sugar pine, tanoak, madrone, longleaf mahonia, modesty flower, deerbrush, bluegrass, bracken fern.	Deerbrush, white leaf manzanita, ponderosa pine, Douglas-fir, incense cedar, knobcone pine, madrone, black oak, white oak, canyon live oak.

Soil Profile Description

Surface Layer	0-8 inches. Pink very gravelly loam; weak fine subangular blocky structure; medium acid.	0-7 inches. Grayish brown very gravelly loam; strong very fine granular structure; slightly acid.	0-6 inches. Brown gravelly loam; massive; slightly acid.
Subsoil	8-60+ inches. Reddish yellow gravelly clay loam; moderate medium subangular blocky structure; strongly acid.	7-30 inches. Light yellowish brown very gravelly clay loam; weak fine subangular blocky structure; medium acid.	6-60+ inches. Yellowish red gravelly clay loam; moderate very fine and fine subangular blocky structure; medium acid.
Substratum or Parent Material		30-42 inches. Very pale brown very gravelly clay loam; massive; medium acid.	

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40-60+ inches. Fractured metamorphic rock.	40-60 inches. Fractured metamorphic rock.	60+ inches. Metamorphic colluvial rock.
Available Water Capacity			
Total	4.7-6.6	3.3-5.1	6.6
Upper 20 inches	2.3	1.7	2.5
Infiltration Rate	Moderately Slow	Moderate	Moderate
Hydrologic Soil Group	B	B	B
Permeability Class	Moderately Slow	Moderately Slow	Slow to Moderately Slow
Max. Erosion Hazard	High	Moderate	High
Erosion Factor (K)	.15	.10	.24
Drainage Class	Well	Well	Well
Soil Manageability			
Class	3Ep	4ep	3Ep
Group	III	IV	III
Range Type	Conifer (6)	Conifer (6)	Broadleaf Trees (10)
Range Site	IX	IX	V
Annual Forage (lb/acre)	250-750	150-550	420-700
Survey Site Class	2 to 4	3	2 to 3
Relative Chance of Seedling Survival	Moderate to Low	Moderate	Moderate to Low
AASHTO:			
Surface	A-4	A-4	A-4
Subsurface	A-7	A-4	A-6
Unified:			
Surface	ML	GM	ML-CL
Subsurface	MH	GM	CL
Inclusions:	5% Deadwood family, rock outcrop.		

142 Holland-Gilligan families association, 30 to 90 percent slopes

Soil Map Unit Components	Elevation: 2,000 to 5,000 feet	Annual Precipitation: 30 to 50 inches
	Holland family	Gilligan family
Approximate Proportion	75%	20%
Landscape Position	Mountain sideslopes and colluvial footslopes.	Mountain sideslopes.
Slope	30 to 50 percent	50 to 90 percent
Typical Vegetation	Douglas-fir, white fir, incense cedar, sugar pine, ponderosa pine, madrone, black oak, canyon live oak, deerbrush, whiteleaf manzanita.	Douglas-fir, white fir, incense cedar, sugar pine, ponderosa pine, madrone, black oak, canyon live oak, deerbrush, whiteleaf manzanita.

Soil Profile Description

Surface Layer	0-8 inches. Pink very gravelly loam; weak fine subangular blocky structure; medium acid.	0-11 inches. brown sandy loam; weak fine granular structure; neutral.
Subsoil	8-60+ inches. Reddish yellow gravelly clay loam; moderate medium subangular blocky structure; strongly acid.	11-29 inches. Light gray fine sandy loam; weak fine subangular blocky structure to massive; medium acid.
Substratum or Parent Material		29-47 inches. White fine sandy loam; massive; medium acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40-60+ inches. Disintegrated granitic rock.	40-60 inches. Disintegrated granitic rock.
Available Water Capacity		
Total	4.7-6.6	4.1-6.1
Upper 20 inches	2.3	2.1
Infiltration Rate	Moderate	Moderately Rapid
Hydrologic Soil Group	B	B
Permeability Class	Moderately Slow	Moderate to Moderately Rapid
Erosion Hazard, Maximum	High	High
Erosion Factor (K)	.17	.28
Drainage Class	Well	Somewhat Excessively
Soil Manageability Class		
Group	3Ep III	4Ep IV
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	250-750	2
Forest Survey Site Class	3	3 to 4
Relative Chance of Seedling Survival	Low	Moderate
AASHTO: Surface	A-4	A-2-4
Subsurface	A-7	A-4
Unified: Surface	ML	SM
Subsurface	MH	SM
Inclusions:	5% Soils similar to Deadwood on granitic rock; rock outcrop.	

143 Holland-Skalan families association, 15 to 30 percent slopes.

Soil Map Unit Components	Elevation: 1,500 to 5,200 feet Annual Precipitation: 30 to 55 inches		
	Holland family	Skalan family	
	Approximate Proportion	55%	30%
	Landscape Position	Broad mountain sideslopes and landslide benches.	Mountain sideslopes and landslide deposits.
	Slope	15 to 30 percent	15 to 30 percent
Typical Vegetation	Douglas-fir, ponderosa pine, incense cedar, sugar pine, madrone, black oak, white oak, deerbrush, squaw carpet, whiteleaf manzanita, vetch, fescue, brome.	Douglas-fir, ponderosa pine, incense cedar, sugar pine, white fir, black oak, madrone, deerbrush, whiteleaf and pinemat manzanita, snowberry, vetch, fescue.	
Soil Profile Description			
Surface Layer	0-8 inches. Pink very gravelly loam; weak fine subangular blocky structure; medium acid.	0-5 inches. Brown very gravelly loam; moderate fine subangular blocky structure; medium to strongly acid.	
Subsoil	8-60+ inches. Reddish yellow gravelly clay loam; moderate medium subangular blocky structure; strongly acid.	5-26 inches. Light reddish brown very gravelly loam; weak to moderate subangular blocky structure; medium acid.	
Substratum or Parent Material		26-32 inches. Light yellowish very gravelly loam; massive; medium acid.	
Soil Qualities and Management Interpretations			
Soil Depth and Parent Material	40-60+ inches. Soft, weathered mica schist.	20-60 inches. Highly fractured mica schist.	
Available Water Capacity			
Total	4.1-6.9	2.6-6.0	
Upper 20 inches	2.3	1.7	
Infiltration Rate	Moderate	Moderate	
Hydrologic Soil Group	B	B	
Permeability Class	Moderately Slow	Moderate	
Erosion Hazard, Maximum	High	Moderate to High	
Erosion Factor (K)	.37	.37	
Drainage Class	Well	Well	
Soil Manageability			
Class	3E	3Ep	
Group	III	III	
Range Type	Conifer (6)	Conifer (6)	
Range Site	IX	IX	
Annual Forage (lb/acre)	250-750	250-750	
Forest Survey Site Class	2 to 3	2 to 3	
Relative Chance of Seedling Survival	Moderate	Moderate to Low	
AASHTO:			
Surface	A-4	A-4	
Subsurface	A-7	A-4	
Unified:			
Surface	ML	ML	
Subsurface	MH	ML	
Inclusions:	15% Clallam, Deadwood, Coboc, and Decy families; areas with slopes greater than 30 percent.		

144 Holland-Skalan families association, 30 to 70 percent slopes

Soil Map Unit Components	Elevation: 2,500 to 5,200 feet	Annual Precipitation: 30 to 50 inches
	Holland family	Skalan family
Approximate Proportion	40%	30%
Landscape Position	Broad ridges, mountain sideslopes and colluvial footslopes.	Mountain sideslopes.
Slope	30 to 50 percent	30 to 70 percent
Typical Vegetation	Douglas-fir, ponderosa pine, incense cedar, sugar pine, white fir, madrone, black oak, poison oak, whiteleaf manzanita, deerbrush, Oregon grape.	Douglas-fir, ponderosa pine, incense cedar, sugar pine, white fir, black and white oak, mountain mahogany, whiteleaf manzanita, Oregon grape, perennial grasses.

Soil Profile Description

Surface Layer	0-8 inches. Pink very gravelly loam; weak fine subangular blocky structure; medium acid.	0-5 inches. Brown very gravelly loam; moderate fine subangular blocky structure; medium to strongly acid.
Subsoil	8-60+ inches. Reddish yellow gravelly clay loam; moderate subangular blocky structure; strongly acid.	5-26 inches. Light reddish brown very gravelly loam; weak to moderate subangular blocky structure; medium acid.
Substratum or Parent Material		26-32 inches. Light yellowish brown very gravelly loam; massive; medium acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40-60+ inches. Fractured metamorphic rock.	20-40 inches. Fractured metamorphic rock.
Available Water Capacity		
Total	4.7-6.6	1.6-3.2
Upper 20 inches	2.3	1.7
Infiltration Rate	Moderate	Moderately Rapid
Hydrologic Soil Group	B	B
Permeability Class	Moderately Slow	Moderately Slow to Moderately Rapid
Erosion Hazard, Maximum	High	High
Erosion Factor (K)	.15	.10
Drainage Class	Well	Well
Soil Manageability		
Class	3Epx	3Epx
Group	III	III
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	250-750	150-550
Forest Survey Site Class	2 to 4	3 to 5
Relative Chance of Seedling Survival	Moderate to Low	Moderate to Low
AASHTO: Surface	A-4	A-4
Subsurface	A-7	A-4
Unified: Surface	ML	GM
Subsurface	MH	GM
Inclusions:	30% Lithic Haploxeralfs; Deadwood family; rock outcrop, Coboc family; Clallam family.	

145 Inville family, 15 to 50 percent slopes

Elevation: 5,000 to 6,000 feet Annual Precipitation: 20 to 30 inches

Inville family

Soil Map Unit Components	
Approximate Proportion	75%
Landscape Position	Volcanic sideslopes, ridges and flowends.
Slope	15 to 50 percent
Typical Vegetation	Ponderosa pine, Douglasfir, white fir, red fir, greenleaf manzanita, rabbitbrush, snowbrush, bitterbrush, ribes, fescue, bottlebrush squirreltail.

Soil Profile Description

Surface Layer	0-7 inches. Brown gravelly loam; weak very fine granular structure; medium acid.
Subsoil	7-30 inches. Reddish brown gravelly to very cobbly loam; moderate medium subangular blocky structure; strongly acid.
Substratum or Parent Material	30+ inches. Soft weathered olivine basalt.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-60 inches. Soft, weathered olivine basalt.
Available Water Capacity	
Total	2.2-6.6
Upper 20 inches	2.4
Infiltration Rate	Moderate
Hydrologic Soil Group	B
Permeability Class	Moderate to Moderately Rapid
Erosion Hazard, Maximum	Moderate
Erosion Factor (K)	.24
Drainage Class	Well
Soil Manageability	
Class	2ep
Group	II
Range Type	Conifer (6)
Range Site	IX
Annual Forage (lb/acre)	250-750
Forest Survey Site Class	4 to 5
Relative Chance of Seedling Survival	Low
AASHTO: Surface	A-6
Subsurface	A-2
Unified: Surface	CL
Subsurface	GM or GC
Inclusions:	25% Soils similar to Inville, with less rock fragments; soils without a clay increase in the subsoil; soils similar to Inville with a dark surface horizon; rock outcrop.

146 Inville-Wintoner families complex, 2 to 15 percent slopes

		Elevation: 5,000 to 6,000 feet	Annual Precipitation: 20 to 30 inches
Soil Map Unit Components		Inville family	Wintoner family
Approximate Proportion		60%	25%
Landscape Position		Volcano footslopes and flow terraces.	Volcano footslopes and flow terraces.
Slope		2 to 15 percent	2 to 15 percent
Typical Vegetation		Ponderosa pine, white fir, incense cedar, Douglas-fir, knobcone pine, red fir, snowbrush, chinquapin, currant, squaw carpet, bitterbrush, greenleaf and pinemat manzanita.	Douglas-fir, ponderosa pine, incense cedar, deerbrush, currant.
Soil Profile Description			
Subsoil		7-30 inches. Reddish brown gravelly to very cobbly loam; moderate medium subangular blocky structure; strongly acid.	11-60 inches. Light reddish brown gravelly to extremely gravelly loam; moderate fine subangular blocky structure; slightly acid to mildly alkaline.
Substratum or Parent Material		30+ inches. Highly weathered and disintegrated andesite or basalt over hard rock.	
Soil Qualities and Management Interpretations			
Soil Depth and Parent Material		20-60 inches. Andesite or basalt over hard rock.	40+ inches. Andesite, basalt, metamorphic rock.
Available Water Capacity			
Total		2.2-6.6	4.8-7.2
Upper 20 inches		2.4	0.9
Infiltration Rate		Moderate	Moderate
Hydrologic Soil Group		B	B
Permeability Class		Moderate to Moderately Rapid	Moderately Slow to Moderately Rapid
Erosion Hazard, Maximum		Moderate	Moderate
Erosion Factor (K)		.24	.32
Drainage Class		Well	Well
Soil Manageability			
Class		2ep	2e
Group		II	II
Range Type		Conifer (6)	Conifer (6)
Range Site		IX	IX
Annual Forage (lb/acre)		250-750	250-750
Forest Survey Site Class		4 to 5	4 to 5
Relative Chance of Seedling Survival		Low	Moderate
AASHTO:	Surface	A-6	A-6
	Subsurface	A-2	A-4
Unified:	Surface	CL	CL
	Subsurface	GM or GC	ML-CL
Inclusions:		15% Soils similar to Inville and Wintoner but containing less clay or having a darkened surface horizon; rock outcrop.	

147 Inville-Wintoner families complex, 30 to 50 percent slopes.

Soil Map Unit Components	Elevation: 4,900 to 6,800 feet	Annual Precipitation: 55 to 65 inches
	Inville family	Wintoner family
Approximate Proportion	50%	30%
Landscape Position	Undulating mountain sideslopes and broad ridges with many benches.	Undulating mountain sideslopes and broad ridges with many slump benches.
Slope	30 to 50 percent	30 to 50 percent
Typical Vegetation	True fir forest with some incense cedar and sugar pine, rose, gooseberry, snowberry.	True fir forest with some incense cedar and sugar pine, rose, gooseberry, snowberry.

Soil Profile Description

Surface Layer	0-7 inches. Brown gravelly loam; weak very fine granular structure; medium acid.	0-11 inches. Grayish brown gravelly loam; moderate fine and medium granular structure; neutral.
Subsoil	7-30 inches. Reddish brown gravelly to very cobbly loam; moderate medium subangular blocky structure; strongly acid.	11-60 inches. Light reddish brown gravelly to extremely gravelly loam; moderate fine subangular blocky structure; slightly acid to mildly alkaline.
Substratum or Parent Material	30+ inches. Weathered and disintegrated andesite, basalt, or mixed metamorphic rock.	

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-60+ inches. Andesite, basalt, metamorphic rock.	40-60 inches. Andesite, basalt, metamorphic rock.
Available Water Capacity		
Total	2.2-6.6	4.8-7.2
Upper 20 inches	2.4	0.9
Infiltration Rate	Moderate	Moderate
Hydrologic Soil Group	B	B
Permeability Class	Moderate to Moderately Rapid	Moderately Slow to Moderately Rapid
Erosion Hazard, Maximum	Moderate to High	Moderate to High
Erosion Factor (K)	.24	.32
Drainage Class	Well	Well
Soil Manageability		
Class	3Ep	3E
Group	III	III
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	250-750	250-750
Forest Survey Site Class	2 to 3	2 to 3
Relative Chance of Seedling Survival	Moderate to Low	Moderate to Low
AASHTO: Surface	A-4	A-4
Subsurface	A-4	A-4
Unified: Surface	ML-CL	ML-CL
Subsurface	ML-CL	ML-CL
Inclusions:	20% Tallac and Woodseye families.	

148 Jayar family, 30 to 70 percent slopes

Elevation: 5,000 to 6,800 feet Annual Precipitation: 30 to 40 inches

Jayar family

Soil Map Unit Components	
Approximate Proportion	75%
Landscape Position	Mountain sideslopes.
Slope	30 to 70 percent
Typical Vegetation	Ponderosa pine, white fir, Douglas-fir, red fir, snowberry, currant.

Soil Profile Description

Surface Layer	0-2 inches. Brown very gravelly loam; strong very fine and fine granular structure; slightly, acid.
Subsoil	2-24 inches. Yellowish brown very gravelly loam; moderate very fine and fine subangular blocky structure to massive; slightly acid.
Substratum or Parent Material	24-34 inches. Pale yellow very gravelly sandy loam; massive; slightly acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-60 inches. Metamorphic or granitic rocks.
Available Water Capacity	
Total	1.5-3.4
Upper 20 inches	1.8
Infiltration Rate	Moderately Rapid
Hydrologic Soil Group	B
Permeability Class	Moderate to Moderately Rapid
Erosion Hazard, Maximum	Moderate
Erosion Factor (K)	.05
Drainage Class	Well
Soil Manageability	
Class	3Pex
Group	III
Range Type	Conifer (6)
Range Site	IX
Annual Forage (lb/acre)	150-550
Forest Survey Site Class	4 to 5
Relative Chance of Seedling Survival	Low
AASHTO: Surface	A-4
Subsurface	A-4
Unified: Surface	ML
Subsurface	SM
Inclusions:	25% Rogue family soils with clay increase in the subsoil; very young soils lacking diagnostic horizons; rock outcrop.

149 Jayar family-Lithic Mollic Haploxeralfs association, 30 to 70 perce

Soil Map Unit Components	Elevation: 4,800 to 6,800 feet	Annual Precipitation: 45 to 55 inches	
	Jayar family	Lithic Mollic Haploxeralfs	
	Approximate Proportion	50%	25%
	Landscape Position	Mountain sideslopes and colluvial footslopes.	Mountain sideslopes and ridges.
	Slope	30 to 70 percent	30 to 70 percent
Typical Vegetation	White fir, Douglas-fir, pinemat manzanita, greenleaf manzanita, lupine.	Curlyleaf mountain mahogany, greenleaf manzanita, big sagebrush, huckleberry oak, buckwheat, white fir, western juniper with bare ground and gravel pavement.	

Soil Profile Description

Surface Layer	0-2 inches. Brown very gravelly loam; strong very fine and fine granular structure; slightly acid.	0-3 inches. Brown very gravelly sandy loam; weak fine subangular blocky structure; medium acid.
Subsoil	2-24 inches. Yellowish brown very gravelly loam; moderate fine and very fine subangular blocky structure to massive; slightly acid.	3-14 inches. Brown very gravelly loam; weak fine subangular blocky structure; medium acid.
Substratum or Parent Material	24-34 inches. Pale yellow very gravelly sandy loam; massive; slightly acid.	14+ inches. Fractured metamorphic rock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-60 inches. Fractured metamorphic rock.	Less than 20 inches. Metamorphic rock.
Available Water Capacity		
Total	1.6-3.7	1.5 Max.
Upper 20 inches	1.8	1.5
Infiltration Rate	Moderate	Moderately Rapid to Rapid
Hydrologic Soil Group	B	C
Permeability Class	Moderate to Moderately Rapid	Moderately Slow to Moderate
Erosion Hazard, Maximum	Moderate	High
Erosion Factor (K)	.10	.10
Drainage Class	Well	Well
Soil Manageability		
Class	3Pex	3Epx
Group	III	III
Range Type	Conifer (6)	Browse-Mtn Shrub (5) and Chaparral
Range Site	IX	VI
Annual Forage (lb/acre)	150-550	100-300
Forest Survey Site Class	3 to 4	5
Relative Chance of Seedling Survival	Low	Low to Very Low
AASHTO: Surface	A-4	A-1
Subsurface	A-4	A-4
Unified: Surface	GM	GM,SM
Subsurface	GM	GM
Inclusions:	25% Rock outcrop; talus; Wintoner family; Inville family; Woodseye family.	

150 Jayar-Woodseye families association, 30 to 70 percent slopes

Elevation: 4,800 to 7,000 feet

Annual Precipitation: 60 to 100 inches

Jayar family

Woodseye family

Soil Map Unit Components

Approximate Proportion

60%

30%

Landscape Position

Colluvial footslopes.

Mountain sideslopes and ridges.

Slope

30 to 70 percent

50 to 70 percent

Typical Vegetation

Red fir, mountain hemlock, white fir, snowbrush, sadler oak, strawberry shinleaf.

Huckleberry oak, greenleaf manzanita, bittercherry, snowbrush, buckwheat, Indian paintbrush, lupine, red fir, white fir, incense cedar.

Soil Profile Description

Surface Layer

0-2 inches. Brown very gravelly loam; strong very fine granular structure; slightly acid.

0-7 inches. Dark grayish brown very gravelly loam; moderate very fine granular structure; strongly acid.

Subsoil

2-24 inches. Yellowish brown very gravelly loam; moderate fine and very fine subangular blocky structure to massive; slightly acid.

Substratum or Parent Material

24-34 inches. Pale yellow very gravelly sandy loam; massive; slightly acid.

7-19 inches. Brown very gravelly loam; massive; very strongly acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

20-60 inches. Fractured metamorphic rock.

Less than 20 inches. Metamorphic rock.

Available Water Capacity

Total

1.6-3.7

2.1 Max.

Upper 20 inches

1.8

2.1

Infiltration Rate

Moderate

Moderate

Hydrologic Soil Group

B

C

Permeability Class

Moderate to Moderately Rapid

Moderate

Erosion Hazard, Maximum

Moderate

High

Erosion Factor (K)

.10

.28

Drainage Class

Well

Well

Soil Manageability

Class

3Pex

4Epx

Group

III

IV

Range Type

Conifer (6)

Browse-Mtn Shrub (5) and Chaparral

Range Site

IX

VI

Annual Forage (lb/acre)

150-550

100-300

Forest Survey Site Class

2 to 3

5

Relative Chance of Seedling Survival

Low

Low

AASHTO: Surface Subsurface

A-4

A-4

A-4

A-4

Unified: Surface Subsurface

GM

ML,CL-ML

GM

GM

Inclusions:

10% Rock outcrop, and deeper soils similar to Woodseye family.

151 Kang-Beaughton families association, 9 to 90 percent slopes

Soil Map Unit Components	Elevation: 2,000 to 4,800 feet Annual Precipitation: 20 to 40 inches	
	Kang family	Beaughton family
	Approximate Proportion	
	Landscape Position	
	Slope	
Typical Vegetation		

Soil Profile Description

Surface Layer	0-3 inches. Very dark grayish brown gravelly sandy clay loam; weak fine granular structure; neutral.	0-1 inches. Grayish brown extremely gravelly loam; weak very fine granular structure; slightly acid.
Subsoil	3-27 inches. Very dark grayish brown gravelly clay loam; moderate medium subangular blocky structure; neutral.	1-12 inches. Grayish brown very gravelly clay loam; weak very fine and fine subangular blocky structure; neutral.
Substratum or Parent Material	27+ inches. Hard fractured serpentinitic rock.	12+ inches. Hard fractured serpentinitic rock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-40 inches. Fractured serpentinitic rock.	Less than 20 inches. Serpentinitic rock.
Available Water Capacity		
Total	2.3-4.5	1.7
Upper 20 inches	1.4	1.7
Infiltration Rate	Moderate	Moderate
Hydrologic Soil Group	B	C
Permeability Class	Slow to Moderately Slow	Slow to Moderately Slow
Erosion Hazard, Maximum	High to very High	Very High
Erosion Factor (K)	.05	.10
Drainage Class	Well	Well
Soil Manageability		
Class	3Epx	4Epx
Group	III	IV
Range Type	Perennial Grasslands (1)	Perennial Grasslands (1)
Range Site	III	III
Annual Forage (lb/acre)	250-500	2
Forest Survey Site Class	5	6 to 7
Relative Chance of Seedling Survival	Moderate to Low	Low to Very Low
AASHTO: Surface	A-2-6	A-4
Subsurface	A-7	A-7
Unified: Surface	SC	ML
Subsurface	CH	CH
Inclusions:	20% Rock outcrop; talus; deeper soils similar to Beaughton family; Mollic Haploxeralfs; Guemes family; Lithic Haploxeralfs.	

152 Lava flows

Elevation: 5,200 to 7,000 feet Annual Precipitation: 20 to 40 inches
Lava Flows

Soil Map Unit
Components

70%

Approximate
Proportion

Landscape Position

Slope

Typical Vegetation

Soil Profile Description

Surface Layer

Subsoil

Substratum or Parent
Material

Soil Qualities and Management Interpretations

Soil Depth and Parent
Material

Available Water Capacity

Total

Upper 20 inches

Infiltration Rate

Hydrologic Soil Group

Permeability Class

Erosion Hazard,
Maximum

Erosion Factor (K)

Drainage Class

Soil Manageability

Class

Group

Range Type

Waste and Barren (7)

Range Site

None

Annual Forage (lb/acre)

<50

Forest Survey Site
Class

Relative Chance of
Seedling Survival

AASHTO: Surface
 Subsurface

Unified: Surface
 Subsurface

Inclusions:

30% Small areas of soil in the form of volcanic ejecta, volcanic dust, pumice or cinders.

153 Lithic Haploxeralfs-Holland family association, 30 to 70 percent slopes

Soil Map Unit Components	Elevation: 2,000 to 5,000 feet	Annual Precipitation: 30 to 40 inches
	Lithic Haploxeralfs	Holland family
Approximate Proportion	50%	20%
Landscape Position	Mountain sideslopes.	Broad ridges, mountain sideslopes and colluvial footslopes.
Slope	50 to 70 percent	30 to 50 percent
Typical Vegetation	Canyon live oak and Oregon white oak with scattered Douglas-fir and ponderosa pine, whiteleaf manzanita and poison oak, with much bare ground.	Douglas-fir, ponderosa pine, incense cedar, sugar pine, canyon live oak, Oregon white oak madrone, poison oak whiteleaf manzanita.

Soil Profile Description

Surface Layer	0-10 inches. Light yellowish brown very gravelly loam; moderate very fine and fine subangular blocky structure; slightly acid.	0-8 inches. Pink very gravelly loam; weak fine subangular blocky structure; medium acid.
Subsoil	10-13 inches. Light yellowish brown very gravelly clay loam; moderate fine subangular blocky structure; neutral.	8-60+ inches. Reddish yellow gravelly clay loam; moderate medium subangular blocky structure; strongly acid.
Substratum or Parent Material	13+ inches. Fractured, hard metamorphic rock.	

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	Less than 20 inches. Metamorphic rock.	40-60 inches. Fractured metamorphic rock.
Available Water Capacity		
Total	1.8 Max.	4.8-6.6
Upper 20 inches	1.8	2.3
Infiltration Rate	Moderate	Moderately Slow
Hydrologic Soil Group	C	B
Permeability Class	Moderately Slow to Moderately Rapid	Moderately Slow
Erosion Hazard, Maximum	High	Moderate
Erosion Factor (K)	.10	.15
Drainage Class	Well	Well
Soil Manageability		
Class	4Ex	3epx
Group	IV	III
Range Type	Woodland Chaparral (10)	Conifer (6)
Range Site	VI	IX
Annual Forage (lb/acre)	210-350	250-750
Forest Survey Site Class	5	2 to 4
Relative Chance of Seedling Survival	Low to Very Low	Moderate to Low
AASHTO: Surface	A-4	A-4
Subsurface	A-6	A-6
Unified: Surface	GM	GM
Subsurface	SC,CL	SC,GC,CL
Inclusions:	30% Rock outcrop; Deadwood family; Clallam family; Bluesprin family.	

154 Lithic Mollic Haploxeralfs-Bluesprin family association, 30 to 90 percent slopes

Soil Map Unit Components	Elevation: 2,000 to 4,800 feet	Annual Precipitation: 30 to 50 inches
	Lithic Mollic Haploxeralfs	Bluesprin family
Approximate Proportion	60%	20%
Landscape Position	Mountain sideslopes.	Mountain sideslopes.
Slope	50 to 90 percent	30 to 50 percent
Typical Vegetation	Buckbrush, silktassel, Oregon white oak, annual grasses, canyon live oak, Douglas-fir, ponderosa pine, knobcone pine.	Oregon white oak forest, with California fescue and other perennial grasses.

Soil Profile Description

Surface Layer	0-3 inches. Brown very gravelly sandy loam; weak fine subangular blocky structure; medium acid.	0-11 inches. Brown very gravelly loam; weak fine granular structure; neutral.
Subsoil	3-14 inches. Brown very gravelly loam; weak fine subangular blocky structure; medium acid.	11-23 inches. Brownish yellow very gravelly clay loam; weak fine and medium subangular blocky structure; neutral.
Substratum or Parent Material	14+ inches. Fractured hard metamorphic rock.	23+ inches. Highly fractured metamorphic bedrock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	Less than 20 inches. Metamorphic rock.	20-60 inches. Fractured metamorphic rock.
Available Water Capacity		
Total	1.5 Max.	1.7-5.3
Upper 20 inches	1.5	1.3
Infiltration Rate	Moderately Rapid to Rapid	Moderate
Hydrologic Soil Group	C	B
Permeability Class	Moderately Slow to Moderate	Moderately Slow
Erosion Hazard, Maximum	High	High
Erosion Factor (K)	.10	.10
Drainage Class	Well	Well
Soil Manageability		
Class	4Epx	3Epx
Group	IV	III
Range Type	Browse-Mtn Shrub (5) and Chaparral	Woodland Chaparral (10)
Range Site	VI	VI
Annual Forage (lb/acre)	100-300	420-700
Forest Survey Site Class	5	2 to 4
Relative Chance of Seedling Survival	Low to Very Low	Low
AASHTO: Surface	A-1	A-4
Subsurface	A-4	A-6
Unified: Surface	GM,SM	GM
Subsurface	GM	SC,CL
Inclusions:	20% Rock outcrop and Clallam family.	

155 Lithic Mollic Haploxeralfs-Dubakella family association, 15 to 70 percent slopes

Soil Map Unit Components	Elevation: 1,000 to 5,000 feet Annual Precipitation: 50 to 80 inches	
	Lithic Mollic Haploxeralfs	Dubakella family
	45%	30%
	Mountain sideslopes.	Mountain sideslopes and benches.
Slope	30 to 70 percent	15 to 50 percent
Typical Vegetation	California fescue, bottlebrush squirreltail, Jeffrey pine, incense cedar, buckbrush, whiteleaf manzanita, 35% bare ground.	Douglas-fir, Jeffrey pine, incense cedar, sugar pine, white oak, Idaho fescue.
Soil Profile Description		
Surface Layer	0-3 inches. Brown very gravelly sandy loam; weak fine subangular blocky structure; medium acid.	0-12 inches. Reddish brown silt loam; weak fine and very fine granular structure; neutral.
Subsoil	3-14 inches. Brown very gravelly loam; weak fine subangular blocky structure; medium acid.	12-33 inches. Reddish brown very gravelly clay loam or very cobbly clay; moderate coarse subangular blocky structure; neutral.
Substratum or Parent Material	14+ inches. Hard serpentinitic rock.	33-36 inches. Light yellowish brown cobbly silty clay loam; massive; neutral.
Soil Qualities and Management Interpretations		
Soil Depth and Parent Material	Less than 20 inches. Serpentinitic rock.	20-60 inches. Hard serpentinitic bedrock.
Available Water Capacity		
Total	1.5	3.2-8.5
Upper 20 inches	1.5	2.2
Infiltration Rate	Moderate	Moderate
Hydrologic Soil Group	D	C
Permeability Class	Moderately Slow to Moderate	Slow to Moderately Slow
Erosion Hazard, Maximum	High	Moderate to High
Erosion Factor (K)	.10	.43
Drainage Class	Well	Well
Soil Manageability		
Class	3Epx	3Ex
Group	III	III
Range Type	Browse-Mtn Shrub (5) and Chaparral	Conifer (6)
Range Site	IV	IX
Annual Forage (lb/acre)	50 to 100	250-750
Forest Survey Site Class	5	3 to 4
Relative Chance of Seedling Survival	Low to Very Low	High to Moderate
AASHTO: Surface	A-1	A-4
Subsurface	A-4	A-7
Unified: Surface	GM,SM	ML-CL
Subsurface	GM	CH
Inclusions:	25% Lithic Xerorthents, ultramafic; rock outcrop; Olete and Weitchpec families.	

156 Lithic Mollic Haploxeralfs-Rock outcrop association, 30 to 70 percent slopes

Soil Map Unit Components	Elevation: 4,800 to 6,800 feet	Annual Precipitation: 40 to 60 inches	
	Lithic Mollic Haploxeralfs	Rock outcrop	
	Approximate Proportion	50%	30%
	Landscape Position	Mountain sideslopes and ridges.	Mountain sideslopes, ridges and cliffs.
	Slope	30 to 70 percent	
Typical Vegetation	Curlyleaf mountain mahogany, greenleaf manzanita big sagebrush, huckleberry oak, buckwheat, few white fir and western juniper, bare ground with gravel pavement.		

Soil Profile Description

Surface Layer	0-3 inches. Brown very gravelly sandy loam; weak fine subangular blocky structure; medium acid.
Subsoil	3-14 inches. Brown very gravelly loam; weak fine subangular blocky structure; medium acid.
Substratum or Parent Material	14+ inches. Hard fractured metamorphic rock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	Less than 20 inches. Metamorphic rock.	
Available Water Capacity		
Total	1.5 Max.	
Upper 20 inches	1.5	
Infiltration Rate	Moderate	
Hydrologic Soil Group	C	
Permeability Class	Moderately Slow to Moderate	
Erosion Hazard, Maximum	High	
Erosion Factor (K)	.10	
Drainage Class	Well	
Soil Manageability Class	3 EXp	
Group	III	
Range Type	Browse-Mtn Shrub (5) and Chaparral	Waste & Barren (7)
Range Site	VI	none
Annual Forage (lb/acre)	50-100	2
Forest Survey Site Class	5	
Relative Chance of Seedling Survival	Very Low to Low	
AASHTO: Surface	A-1	
Subsurface	A-4	
Unified: Surface	GM, SM	
Subsurface	GM	
Inclusions:	20% Rogue family; Jayar family; Wintoner family; Inville family; talus, and very shallow soils. Geomorphic position is colluvial footslopes.	

157 Lithic Ruptic-Xerochreptic Haploxeralfs-Olete family association, 30 to 90 percent slopes

Soil Map Unit Components	Elevation: 2,000 to 5,000 feet	Annual Precipitation: 60 to 80 inches
	Lithic RupticXerochreptic Haploxeralfs	Olete family
Approximate Proportion	60%	30%
Landscape Position	Mountain sideslopes.	Mountain sideslopes and colluvial footslopes.
Slope	50 to 90 percent	30 to 70 percent
Typical Vegetation	Jeffrey pine, incense cedar, Douglas-fir, white leaf manzanita, huckleberry oak, siltassel, buckbrush, madrone.	Huckleberry oak, pinemat manzanita, California bay, siltassel, coffeeberry, Jeffrey pine, incense cedar, Douglas-fir.

Soil Profile Description

Surface Layer	0-1 inches. Reddish brown loam; moderate very fine granular structure; medium acid.	0-3 inches. Strong brown very gravelly loam; moderate fine granular structure; strongly acid.
Subsoil	1-17 inches. Red clay loam; moderate medium subangular blocky structure; medium acid.	3-40 inches. Reddish yellow very gravelly loam; moderate fine subangular blocky structure; strongly to medium acid.
Substratum or Parent Material	17+ inches. Hard peridotite rock.	40-60 inches. Yellow very gravelly loam; massive; slightly acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	Less than 20 inches. Hard peridotite bedrock.	40-60+ inches. Fractured peridotite bedrock.
Available Water Capacity		
Total	1.9	3.0-4.0
Upper 20 inches	1.9	1.3
Infiltration Rate	Moderate	Moderate
Hydrologic Soil Group	C	B
Permeability Class	Moderately Slow to Moderately Rapid	Moderately Slow to Moderately Rapid
Erosion Hazard, Maximum	High	High
Erosion Factor (K)	.20	.10
Drainage Class	Well	Somewhat Excessively
Soil Manageability		
Class	4Ex	4Epx
Group	IV	IV
Range Type	Browse-Mtn Shrub (5) and Chaparral	Browse-Mtn Shrub (5) and Chaparral
Range Site	VI	VI
Annual Forage (lb/acre)	100-300	100-300
Forest Survey Site Class	5	4
Relative Chance of Seedling Survival	Very Low	Low to Moderate
AASHTO: Surface	A-4	A-4
Subsurface	A-6	
Unified: Surface	ML	ML-CL
Subsurface	CL	
Inclusions:	10% Rock outcrop and talus. Guemes family on colluvial slopes.	

158 Lithic Ruptic-Xerochreptic Haploxeralfs-Parks family association, 30 to 90 percent slopes

	Elevation: 4,800 to 6,800 feet	Annual Precipitation: 70 to 100 inches
Soil Map Unit Components	Lithic RupticXerochreptic Haploxeralfs	Parks family
Approximate Proportion	60%	30%
Landscape Position	Mountain sideslopes.	Mountain sideslopes.
Slope	50 to 90 percent	30 to 70 percent
Typical Vegetation	Huckleberry oak, silktassel, coffeeberry, squaw carpet, greenleaf and pinemat manzanita, Jeffrey pine, incense cedar, beargrass.	Western white pine, white fir, red fir, incense cedar, pinemat manzanita, currant.

Soil Profile Description

Surface Layer	0-1 inches. Reddish brown loam; moderate very fine granular structure; medium acid.	0-7 inches. Yellowish red gravelly fine sandy loam; moderate very fine and fine granular structure; neutral.
Subsoil	1-17 inches. Red clay loam; moderate medium subangular blocky structure; medium acid.	7-33 inches. Yellowish red gravelly fine sandy loam; weak moderate and coarse subangular blocky structure; neutral.
Substratum or Parent Material	17+ inches. Hard peridotite.	33-37 inches. Strong brown very gravelly fine sandy loam; massive; neutral.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	10-20 inches. Hard peridotite bedrock.	20-40 inches. Hard dunite bedrock.
Available Water Capacity		
Total	1.9	1.8-3.4
Upper 20 inches	1.9	1.3
Infiltration Rate	Moderate	Moderate
Hydrologic Soil Group	C	B
Permeability Class	Moderately Slow to Moderately Rapid	Moderate to Rapid
Erosion Hazard, Maximum	High	Moderate to High
Erosion Factor (K)	.20	.24
Drainage Class	Well	Well
Soil Manageability		
Class	4Ex	3Epx
Group	IV	III
Range Type	Browse-Mtn Shrub (5) and Chaparral	Browse-Mtn Shrub (5) and Chaparral
Range Site	VI	VI
Annual Forage (lb/acre)	100-300	100-300
Forest Survey Site Class	5 to 6	4 to 5
Relative Chance of Seedling Survival	Very Low	Low to Moderate
AASHTO: Surface	A-4	A-4
Subsurface	A-6	A-4
Unified: Surface	ML	SM
Subsurface	CL	SM
Inclusions:	10% Rock outcrop and talus; Lithic Xerorthents, cold.	

159 Lithic Xerorthents, cold-Rock outcrop 30 to 90 percent slopes

Soil Map Unit Components

Approximate Proportion

Elevation: 5,000 to 7,000 feet Annual Precipitation: 50 to 90 inches
Lithic Xerorthents, cold **Rock outcrop**

50%

35%

Landscape Position

Mountain sideslopes.

Slope

30 to 90 percent

Typical Vegetation

Huckleberry oak, coffeeberry, buckwheat, phlox, beargrass, Jeffrey pine, incense cedar, western, white pine.

Soil Profile Description

Surface Layer

0-3 inches. Brown gravelly loamy sand; weak very fine granular structure; neutral.

Subsoil

3-9 inches. Strong brown very gravelly loamy sand; massive; neutral.

Substratum or Parent Material

9+ inches. Hard dunite.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

Less than 20 inches. Hard dunite bedrock.

Available Water Capacity

Total

0.8

Upper 20 inches

0.8

Infiltration Rate

Moderately Rapid

Hydrologic Soil Group

D

Permeability Class

Rapid

Erosion Hazard, Maximum

High

Erosion Factor (K)

.10

Drainage Class

Excessively

Soil Manageability

Class

4EPX

Group

IV

Range Type

Browse-Mtn Shrub (5) and Chaparral

Waste & Barren (7)

Range Site

VI

none

Annual Forage (lb/acre)

75-200

2

Forest Survey Site Class

5 to 7

Relative Chance of Seedling Survival

Very Low

AASHTO: Surface Subsurface

A-4

Unified: Surface Subsurface

ML

Inclusions:

15% Parks; shallow soils similar to Parks; Toadlake family; Lithic Ruptic-Xerochreptic Haploxeralfs.

160 Lithic Xerorthents, granitic-Rock outcrop association, 50 to 90 percent slopes

Soil Map Unit Components	Elevation: 1,500 to 5,000 feet	Annual Precipitation: 40 to 60 inches
	Lithic Xerorthents, granitic	Rock outcrop
Approximate Proportion	45%	30%
Landscape Position	Mountain sideslopes.	
Slope	50 to 90 percent	
Typical Vegetation	Canyon live oak, madrone, whiteleaf manzanita, poison oak, Douglas-fir, ponderosa pine, sugar pine.	

Soil Profile Description

Surface Layer	0-3 inches. Brown sandy loam; massive; medium acid.
Subsoil	3-7 inches. Pale brown sandy loam; massive; medium acid.
Substratum or Parent Material	7+ inches. Weathered granitic bedrock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	Less than 20 inches. Weathered granitic rock.	
Available Water Capacity	Total	0.7-1.9
	Upper 20 inches	1.3
Infiltration Rate	Moderately Rapid	
Hydrologic Soil Group	A	
Permeability Class	Moderate to Rapid	
Erosion Hazard, Maximum	Very High	
Erosion Factor (K)	.37	
Drainage Class	Excessively	
Soil Manageability	Class	4EPX
	Group	IV
Range Type	Broadleaf trees (10)	Waste & Barren (7)
Range Site	VI	None
Annual Forage (lb/acre)	2	2
Forest Survey Site Class	5 to 7	
Relative Chance of Seedling Survival	Low to Very Low	
AASHTO:	Surface	A-2-4
	Subsurface	A-2-4
Unified:	Surface	SM
	Subsurface	SM
Inclusions:	25% Soils with a slight clay increase and color change in the subsoil are present on colluvial slopes.	

161 Lithic Xerorthents, ultramafic, 30 to 70 percent slopes

Elevation: 1,500 to 5,000 feet Annual Precipitation: 50 to 100 inches

Soil Map Unit Components**Lithic Xerorthents, ultramafic****Approximate Proportion**

90%

Landscape Position Slope

Mountain sideslopes.

30 to 70 percent

Typical Vegetation

Jeffrey pine, incense cedar, huckleberry oak, coffeeberry, pinemat manzanita, beargrass.

Soil Profile Description**Surface Layer**

0-9 inches. Light brownish gray gravelly loam; massive; neutral.

Subsoil**Substratum or Parent Material**

9+ inches. Fractured serpentinitic rock.

Soil Qualities and Management Interpretations**Soil Depth and Parent Material**

Less than 20 inches. Hard fractured bedrock.

Available Water Capacity**Total**

1.0

Upper 20 inches

1.0

Infiltration Rate

Moderate

Hydrologic Soil Group

D

Permeability Class

Moderate to Moderately Rapid

Erosion Hazard, Maximum

Very High

Erosion Factor (K)

.24

Drainage Class

Excessively

Soil Manageability**Class**

3EPx

Group

III

Range Type

Conifer (6)

Range Site

IX

Annual Forage (lb/acre)

2

Forest Survey Site Class

5 to 7

Relative Chance of Seedling Survival

Very Low

AASHTO: Surface Subsurface

A-4

Unified: Surface Subsurface

ML

Inclusions:

10% Rock outcrop; Guemes family.

162 Lithic Xerumbrepts-Rock outcrop association, 15 to 90 percent slopes

Soil Map Unit Components	Elevation: 4,600 to 6,800 feet	Annual Precipitation: 50 to 100 inches
	Lithic Xerumbrepts	Rock Outcrop
Approximate Proportion	50%	40%
Landscape Position	Mountain sideslopes and ridges.	
Slope	30 to 90 percent	
Typical Vegetation	Pinemat manzanita, huckleberry oak, thinleaf huckleberry, ponderosa pine, white fir, incense cedar, phlox, sunflower, pink family, Adders Tongue, stonecrop.	

Soil Profile Description

Surface Layer	0-6 inches. Very dark grayish brown gravelly sandy loam; weak very fine granular structure; medium acid.
Subsoil	6-11 inches. Brown very gravelly loamy sand; massive; medium acid.
Substratum or Parent Material	11+ inches. Hard granitic rock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	Less than 20 inches. Hard granitic rock.	
Available Water Capacity		
Total	0.6-0.9	
Upper 20 inches	0.8	
Infiltration Rate	Moderately Rapid	
Hydrologic Soil Group	B	
Permeability Class	Moderately Rapid to Rapid	
Erosion Hazard, Maximum	High	
Erosion Factor (K)	.02	
Drainage Class	Excessively	
Soil Manageability		
Class	4EPX	
Group	IV	
Range Type	Browse-Mtn Shrub (5)	Waste & Barren (7)
Range Site	VI	none
Annual Forage (lb/acre)	100-300	2
Forest Survey Site Class	5 to 6	
Relative Chance of Seedling Survival	Low to Very Low	
AASHTO: Surface	A-2-4	
Subsurface	A-2-4	
Unified: Surface	SM	
Subsurface	SM	
Inclusions:	10% Entic Xerumbrepts on colluvial footslopes.	

163 Merkel family, 2 to 30 percent slopes

Elevation: 5,000 to 6,800 feet Annual Precipitation: 40 to 55 inches

Merkel family

Soil Map Unit Components	
Approximate Proportion	75%
Landscape Position	Ground moraines.
Slope	2 to 30 percent
Typical Vegetation	White fir, Jeffrey pine, western white pine, huckleberry oak, greenleaf manzanita, western serviceberry, phlox, yarrow, sedge, bottlebrush squirreltail.

Soil Profile Description

Surface Layer	0-10 inches. Brown very gravelly loam; moderate fine granular structure; neutral.
Subsoil	10-22 inches. Brown very cobbly loam; moderate fine subangular blocky structure; neutral.
Substratum or Parent Material	22-60+ inches. Yellowish brown very cobbly sandy loam; massive; mildly alkaline.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	Greater than 60 inches in ultramafic till.
Available Water Capacity	
Total	4.0
Upper 20 inches	2.0
Infiltration Rate	Moderate
Hydrologic Soil Group	B
Permeability Class	Moderate
Erosion Hazard, Maximum	Moderate
Erosion Factor (K)	.10
Drainage Class	Well
Soil Manageability	
Class	3Xep
Group	III
Range Type	Conifer (6)
Range Site	IX
Annual Forage (lb/acre)	250-750
Forest Survey Site Class	4
Relative Chance of Seedling Survival	Low to Moderate
AASHTO: Surface	A-4
Subsurface	A-4
Unified: Surface	ML
Subsurface	ML
Inclusions:	25% Boulder fields, glacier scoured rock.

164 Morical-Worley families association, 2 to 50 percent slopes

Soil Map Unit Components	Elevation: 3,500 to 5,000 feet Annual Precipitation: 30 to 40 inches	
	Morical family	Worley family
	Approximate Proportion	60% 30%
	Landscape Position	Mountain sideslopes. Footslopes and undulating flats.
	Slope	30 to 50 percent 2 to 30 percent
Typical Vegetation	Ponderosa pine, incense cedar, Douglas-fir, squaw carpet, greenleaf manzanita, deerbrush, lupine, bottlebrush, squirreltail. Ponderosa pine, incense cedar, white oak, greenleaf and whiteleaf manzanita, rabbitbrush, western mountain mahogany, silktassel, buckbrush, dogbane, lupine, fescue.	
Soil Profile Description		
Surface Layer	0-8 inches. Grayish brown gravelly sandy loam; moderate fine and very fine granular structure; neutral.	0-8 inches. Brown loam; moderate fine granular structure; mildly alkaline.
Subsoil	8-25 inches. Light yellowish brown sandy clay loam; weak fine angular blocky structure; slightly acid.	8-60+ inches. Yellowish brown clay; strong coarse subangular blocky structure; slightly acid.
Substratum or Parent Material	25+ inches. Soft weathered gabbro.	
Soil Qualities and Management Interpretations		
Soil Depth and Parent Material	20-60 inches. Soft, weathered gabbro.	Greater than 60 inches. Soft weathered gabbro.
Available Water Capacity		
Total	2.7-8.3	9.1
Upper 20 inches	2.3	2.2
Infiltration Rate	Rapid	Moderate
Hydrologic Soil Group	B	C
Permeability Class	Moderately Slow to Moderate	Moderately Slow to Slow
Erosion Hazard, Maximum	Moderate to High	Moderate
Erosion Factor (K)	.10	.20
Drainage Class	Well	Well
Soil Manageability		
Class	3Ep	2e
Group	III	II
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	250-750	250-750
Forest Survey Site Class	3 to 4	2
Relative Chance of Seedling Survival	Moderate to Low	Moderate
AASHTO: Surface	A-2-4	A-4
Subsurface	A-6	A-7
Unified: Surface	SM	ML-CL
Subsurface	SC	CH
Inclusions:	10% Soils similar to Morical without a dark surface; soils similar to Worley with more rock fragments in the subsoil.	

165 Nanny family, 2 to 30 percent slopes.

Elevation: 4,800 to 6,800 feet Annual Precipitation: 50 to 90 inches

Nanny family**Soil Map Unit Components**

Approximate Proportion

85%

Landscape Position

Ground moraines.

Slope

2 to 30 percent

Typical Vegetation

Douglas-fir, red fir, white fir, pinemat and greenleaf manzanita, snowbrush, Oregon grape, bittercherry.

Soil Profile Description

Surface Layer

0-12 inches. Dark brown very gravelly sandy loam; weak very fine granular structure; medium acid.

Subsoil

12-46 inches. Very pale brown very gravelly sandy loam; weak fine subangular blocky structure; medium acid.

Substratum or Parent Material

46+ inches. Glacial till.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

Greater than 60 inches in glacial till.

Available Water Capacity

Total

3.0

Upper 20 inches

1.7

Infiltration Rate

Moderately Rapid

Hydrologic Soil Group

B

Permeability Class

Moderate to Moderately Rapid

Erosion Hazard, Maximum

Moderate

Erosion Factor (K)

.10

Drainage Class

Well

Soil Manageability

Class

2epx

Group

II

Range Type

Conifer (6)

Range Site

IX

Annual Forage (lb/acre)

250-750

Forest Survey Site Class

4

Relative Chance of Seedling Survival

Low to Very Low

AASHTO: Surface
Subsurface

A-2-4

A-2-4

Unified: Surface
Subsurface

SM

SM

Inclusions:

15% Rock outcrop; soils with greater amounts of clay and lacking a dark surface horizon; very poorly drained soils in wet areas.

166 Nanny family, 30 to 50 percent slopes

Elevation: 4,800 to 6,800 feet Annual Precipitation: 50 to 90 inches.

Nanny family

Soil Map Unit Components

Approximate Proportion

90%

Landscape Position

Ground moraines.

Slope

30-50 percent

Typical Vegetation

White fir, red fir, Douglas-fir, pinemat and greenleaf manzanita, Oregon grape, bittercherry.

Soil Profile Description

Surface Layer

0-12 inches. Dark brown very gravelly sandy loam; weak very fine granular structure; medium acid.

Subsoil

12-46 inches. Very pale brown very gravelly sandy loam; weak fine subangular blocky structure; medium acid.

Substratum or Parent Material

46+ inches. Glacial till.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

Greater than 60 inches in glacial till.

Available Water Capacity

Total

3.0

Upper 20 inches

1.7

Infiltration Rate

Moderately Rapid

Hydrologic Soil Group

B

Permeability Class

Moderate to Moderately Rapid

Erosion Hazard, Maximum

High

Erosion Factor (K)

.10

Drainage Class

Well

Soil Manageability

Class

3Epx

Group

III

Range Type

Conifer (6)

Range Site

IX

Annual Forage (lb/acre)

250-750

Forest Survey Site Class

3

Relative Chance of Seedling Survival

Low to Very Low

AASHTO: Surface
Subsurface

A-2-4

A-2-4

Unified: Surface
Subsurface

SM

SM

Inclusions:

10% Rock outcrop, and soils with greater amounts of clay and lacking a dark surface horizon.

167 Neuske-Etchen families complex, 2 to 9 percent slopes

Elevation: 4,600 to 5,500 feet Annual Precipitation: 12 to 20 inches.

Neuske family

Etchen family

Soil Map Unit Components

Approximate Proportion

65%

20%

Landscape Position

Mountain footslopes and structural benches.

Mountain footslopes, terraces and glacial outwash deposits.

Slope

2 to 9 percent

2 to 9 percent

Typical Vegetation

Mostly ponderosa pine, with juniper, rubber rabbitbrush, cheatgrass, bluegrass, Idaho fescue.

Mostly ponderosa pine, with juniper, rubber rabbitbrush, cheatgrass, bluegrass, Idaho fescue.

Soil Profile Description

Surface Layer

0-8 inches. Brown loam; very weak very fine granular structure; slightly acid.

0-9 inches. Light brownish gray sandy loam; moderate medium platy structure; neutral.

Subsoil

8-27 inches. Brown loam; moderate fine and medium subangular blocky structure; slightly acid.

9-40 inches. Pale brown extremely gravelly loam; moderate coarse subangular blocky structure; slightly acid.

Substratum or Parent Material

27-45+ inches. Yellowish brown loam; weak medium subangular blocky structure; slightly acid.

40+ inches. Hard fractured andesite and basalt.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

40-60 inches. Fractured andesite and basalt.

40-60 inches. Fractured andesite and basalt.

Available Water Capacity

Total

5.6-8.4

3.2-4.0

Upper 20 inches

2.8

2.6

Infiltration Rate

Moderate

Moderately Rapid

Hydrologic Soil Group

B

B

Permeability Class

Moderately Slow to Moderate

Moderately Slow to Moderately Rapid

Erosion Hazard, Maximum

High

Moderate

Erosion Factor (K)

.24

.28

Drainage Class

Well

Well

Soil Manageability

Class

3Ep

2ep

Group

III

II

Range Type

Conifer (6)

Conifer (6)

Range Site

III

III

Annual Forage (lb/acre)

250-750

250-750

Forest Survey Site Class

5 to 7

7

Relative Chance of Seedling Survival

Low

Low

AASHTO: Surface Subsurface

A-4

A-4

A-4

A-2-6

Unified: Surface Subsurface

ML

SM

ML-CL

SC

Inclusions:

15% Soils similar to Neuske and Etchen families, except they either: have a very low bulk density; have a high base saturation; or lack a dark surface horizon.

168 Olete family-Lithic Ruptic-Xerochreptic Haploxeralfs association, 30 to 90 percent slopes

Soil Map Unit Components	Elevation: 1,500 to 5,000 feet	Annual Precipitation: 50 to 80 inches
	Olete family	Lithic RupticXerochreptic Haploxeralfs
Approximate Proportion	55%	30%
Landscape Position	Mountain sideslopes and colluvial footslopes.	Mountain sideslopes.
Slope	30 to 70 percent	50 to 90 percent
Typical Vegetation	Huckleberry oak, pinemat manzanita, California bay, silktassel, coffeeberry, Jeffrey pine, incense cedar, Douglasfir.	Jeffrey pine, incense cedar, Douglas-fir, whiteleaf manzanita huckleberry oak, buckbrush, silktassel, madrone.

Soil Profile Description

Surface Layer	0-3 inches. Strong brown very gravelly loam; moderate fine granular structure; strongly acid.	0-1 inches. Reddish brown loam; moderate very fine granular structure; medium acid.
Subsoil	3-40 inches. Reddish yellow very gravelly loam; moderate fine subangular blocky structure; strongly to medium acid.	1-17 inches. Red clay loam; moderate medium subangular blocky structure; medium acid.
Substratum or Parent Material	40-60 inches. Yellow very gravelly loam; massive; slightly acid.	17+ inches. Hard peridotite bedrock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40-60+ inches. Hard fractured peridotite.	Less than 20 inches. Hard peridotite bedrock.
Available Water Capacity		
Total	3.0-4.0	1.9
Upper 20 inches	1.3	1.9
Infiltration Rate	Moderate	Moderate
Hydrologic Soil Group	B	C
Permeability Class	Moderately Slow to Moderately Rapid	Moderately Slow to Moderately Rapid
Erosion Hazard, Maximum	High	High
Erosion Factor (K)	.10	.20
Drainage Class	Somewhat Excessively	Well
Soil Manageability		
Class	3Epx	4Epx
Group	III	IV
Range Type	Browse-Mtn Shrub (5) and Chaparral	Conifer (6)
Range Site	V	IX
Annual Forage (lb/acre)	100-300	150-550
Forest Survey Site Class	4	5
Relative Chance of Seedling Survival	Low to Moderate	Very Low
AASHTO: Surface	A-4	A-4
Subsurface		A-6
Unified: Surface	ML-CL	ML
Subsurface		CL
Inclusions:	15% Talus and rock outcrop; Guemes family on colluvial slopes.	

169 Oosen-Avis families complex, 2 to 15 percent slopes

Elevation: 4,800 to 6,000 feet Annual Precipitation: 20 to 30 inches
Oosen family **Avis family**

Soil Map Unit Components

Approximate Proportion

65%

20%

Landscape Position
Slope

Mountain footslopes and flats.
2 to 9 percent

Mountain sideslopes, flats and lava flow ridges.
2 to 15 percent

Typical Vegetation

Ponderosa pine, white fir, greenleaf manzanita, lodgepole pine, red fir, snowbrush, squaw carpet.

Ponderosa pine, white fir, greenleaf manzanita.

Soil Profile Description

Surface Layer

0-11 inches. Light yellowish brown sandy loam; weak very fine granular structure; neutral.

0-6 inches. Very dark grayish brown sand; single grain; slightly acid.

Subsoil

Substratum or Parent Material

11-71+ inches. Pale brown to light brownish gray loamy sand; weak medium subangular blocky structure to massive; neutral.

6-61+ inches. Yellowish brown very cobbly coarse sand; massive; neutral.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

60+ inches. Fractured basalt and andesite.

60+ inches. Fractured basalt and andesite.

Available Water Capacity

Total

5.4

1.5

Upper 20 inches

1.7

0.8

Infiltration Rate

Moderately Rapid

Very Rapid

Hydrologic Soil Group

A

A

Permeability Class

Moderately Rapid to Rapid

Rapid

Erosion Hazard, Maximum

Moderate

Moderate

Erosion Factor (K)

.24

.24

Drainage Class

Somewhat Excessively

Somewhat Excessively

Soil Manageability

Class

2ep

3Pe

Group

II

III

Range Type

Conifer (6)

Conifer (6)

Range Site

IX

IX

Annual Forage (lb/acre)

250-750

250-750

Forest Survey Site Class

4

5

Relative Chance of Seedling Survival

Moderate

Very Low

AASHTO: Surface
Subsurface

A-2-4
A-2-4

A-3
A-1

Unified: Surface
Subsurface

SM
SP-SM

SP

Inclusions:

15% Andic Xerumbrepts, soils with a clay increase in the subsoil.

170 Ovall family-Entic Xerumbrepts-Zeibright family association, 30 to 70 percent slopes.

	Elevation: 1,500 to 5,000 feet Annual Precipitation: 35 to 50 inches		
Map Unit Components	Ovall family	Entic Xerumbrepts	Zeibright family
Approx. Proportion	45%	25%	20%
Landscape Position	Mountain sideslopes and footslopes.	Mountain sideslopes especially upper slopes and ridgetops.	Mountain sideslopes and ridges.
Slope	30 to 50 percent	30 to 70 percent	30 to 70 percent
Typical Vegetation	Douglas-fir, ponderosa pine, madrone, black oak, chinquapin, greenleaf manzanita, incense cedar.	Douglas-fir, ponderosa pine, white fir, black oak, greenleaf manzanita, chinquapin, snowbrush, incense cedar.	Douglas-fir, ponderosa pine, white fir, incense cedar, greenleaf manzanita, black oak, chinquapin, snowbrush.

Soil Profile Description

Surface Layer	0-10 inches. Brown sandy loam; weak very fine granular structure; slightly acid.	0-5 inches. Very dark grayish brown gravelly sandy loam; moderate very fine granular structure; medium acid.	0-7 inches. Dark grayish brown gravelly loam; weak fine granular structure; slightly acid.
Subsoil	10-18 inches. Yellowish brown sandy loam; weak coarse subangular blocky structure; slightly acid.	5-14+ inches. Pale brown gravelly loamy sand; weak fine granular structure; medium acid.	
Substratum or Parent Material	18-43 inches. Soft weathered granitic rock.	14+ inches. Soft weathered granitic rock.	7-30 inches. Yellowish brown very gravelly loamy coarse sand; weak fine granular structure; medium acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40-60 inches. Soft, weathered granitic rock.	Less than 20 inches. Weathered granitic rock.	20-40 inches. Soft, weathered granitic rock.
Available Water Capacity			
Total	3.5-4.9	0.8-1.2	1.0-1.4
Upper 20 inches	2.0	1.0	1.1
Infiltration Rate	Moderately Rapid	Rapid	Moderate
Hydrologic Soil Group	B	B	B
Permeability Class	Moderate to Moderately Rapid	Moderate to Rapid	Moderate to Moderately Rapid
Max. Erosion Hazard	Moderately High	Moderately High	High
Erosion Factor (K)	.17	.10	.15
Drainage Class	Well	Well to Excessively	Well
Soil Manageability			
Class	3epx	3Pex	3EPx
Group	III	III	III
Range Type	Conifer (6)	Conifer (6)	Conifer (6)
Range Site	IX	IX	IX
Annual Forage (lb/acre)	250-750	150-550	150-550
Survey Site Class	3 to 4	5	4 to 5
Relative Chance of Seedling Survival	Low	Low to Very Low	Low to Very Low
AASHTO:			
Surface	A-2-4	A-2-4	A-4
Subsurface	A-2-4	A-2-4	A-2-4
Unified:			
Surface	SM	SM	ML
Subsurface	SM	SM	SM
Inclusions:	10% Rock outcrop; Lithic Xerumbrepts; Rogue family; Jayar family.		

171 Parks family-Lithic Ruptic-Xerochreptic Haploxeralfs association, 30 to 90 percent slopes

Soil Map Unit Components	Elevation: 4,800 to 6,800 feet	Annual Precipitation: 70 to 100 inches
	Parks family	Lithic RupticXerochreptic Haploxeralfs
	Approximate Proportion	60%
	Approximate Proportion	30%
	Landscape Position	Mountain sideslopes.
Slope	Mountain sideslopes.	Mountain sideslopes.
	30 to 70 percent	50 to 90 percent
Typical Vegetation	Western white pine, white fir, red fir, incense cedar, pinemat manzanita, currant.	Huckleberry oak, silktassel, coffeeberry, squaw carpet, greenleaf and pinemat manzanita, Jeffrey pine, incense cedar, beargrass.

Soil Profile Description

Surface Layer	0-7 inches. Yellowish red gravelly fine sandy loam; moderate very fine and fine granular structure; neutral.	0-1 inches. Reddish brown loam; moderate very fine granular structure; medium acid.
Subsoil	7-33 inches. Yellowish red gravelly fine sandy loam; weak moderate and coarse subangular blocky structure; neutral.	1-17 inches. Red clay loam; moderate medium subangular blocky structure; medium acid.
Substratum or Parent Material	33-37 inches. Strong brown very gravelly fine sandy loam; massive; neutral.	17+ inches. Hard peridotite rock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-40 inches. Soft, weathered peridotite.	10-20 inches. Hard, peridotite bedrock.
Available Water Capacity		
Total	1.8-3.4	1.9
Upper 20 inches	1.3	1.9
Infiltration Rate	Moderate	Moderate
Hydrologic Soil Group	B	C
Permeability Class	Moderate to Rapid	Moderately Slow to Moderately Rapid
Erosion Hazard, Maximum	Moderate to High	High
Erosion Factor (K)	.24	.20
Drainage Class	Well	Well
Soil Manageability		
Class	3Epx	4Epx
Group	III	IV
Range Type	Conifer (6)	Browse-Mtn Shrub (5) and Chaparral
Range Site	IX	V
Annual Forage (lb/acre)	150-550	100-300
Forest Survey Site Class	4 to 5	5 to 6
Relative Chance of Seedling Survival	Low to Moderate	Very Low
AASHTO: Surface	A-4	A-4
Subsurface	A-4	A-6
Unified: Surface	SM	ML
Subsurface	SM	CL
Inclusions:	10% Talus and rock outcrop; Lithic Xerorthents, cold.	

172 Quam family, 0 to 5 percent slopes

Elevation: 4,500 to 5,500 feet Annual Precipitation: 20 to 30 inches

Quam family

Soil Map Unit Components	
Approximate Proportion	80%
Landscape Position	Basins, low terraces and fan positions.
Slope	0 to 5 percent
Typical Vegetation	Sedges, rushes and other water loving plants.

Soil Profile Description

Surface Layer	0-21 inches. Gray loam; moderate medium platy structure; medium acid.
Subsoil	
Substratum or Parent Material	21-60 inches. Light brownish gray silt loam; moderate medium subangular blocky structure; neutral.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40+ inches. Mixed alluvium.
Available Water Capacity	
Total	6.4-9.6
Upper 20 inches	3.0
Infiltration Rate	Moderate
Hydrologic Soil Group	D
Permeability Class	Moderately Slow to Moderate
Erosion Hazard, Maximum	High
Erosion Factor (K)	.32
Drainage Class	Somewhat Poorly to Very Poorly
Soil Manageability	
Class	3EW
Group	III
Range Type	Meadow (2)
Range Site	I
Annual Forage (lb/acre)	760-1,200
Forest Survey Site Class	5 to 6
Relative Chance of Seedling Survival	Low
AASHTO: Surface	A-4
Subsurface	A-4
Unified: Surface	ML-CL
Subsurface	ML-CL
Inclusions:	20% Moderately well or well drained soils with a thick dark surface horizon and a clay increase in the subsoil.

173 Redcap-Stonewell families association 2 to 30 percent slopes

Soil Map Unit Components	Elevation: 5,400 to 6,700 feet Annual Precipitation: 20 to 40 inches		
	Redcap family	Stonewell family	
	Approximate Proportion	60%	25%
	Landscape Position	Volcanic mountain footslopes, flats and basins.	Volcanic mountain footslopes, flats and basins.
	Slope	2 to 30 percent	2 to 9 percent
Typical Vegetation	Lodgepole pine, red fir, pinemat manzanita, carex.	Lodgepole pine, white fir, red fir, greenleaf manzanita, snowbrush, rabbitbrush, bitterbrush, squaw carpet, stipa, bottlebrush squirreltail.	

Soil Profile Description

Surface Layer	0-2 inches. Grayish brown gravelly coarse sand; single grain; medium acid.	0-4 inches. Light grayish brown very gravelly loamy coarse sand; single grain; strongly acid.
Subsoil	2-55 inches. Light gray to white gravelly to very gravelly coarse sand to loamy sand, ash and pumice over yellowish brown extremely cobbly sandy loam; weak fine subangular blocky structure; slightly acid.	
Substratum or Parent Material	55+ inches. Fractured, mixed igneous rocks.	4-60 inches. Light gray extremely gravelly loamy coarse sand; single grain; slightly acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	55+ inches. Weathered extrusive igneous rock.	60+ inches. Black cinders.
Available Water Capacity		
Total	2.2	1.2
Upper 20 inches	0.8	0.7
Infiltration Rate	Very Rapid	Very Rapid
Hydrologic Soil Group	A	B
Permeability Class	Moderately Rapid to Rapid	Rapid to Very Rapid
Erosion Hazard, Maximum	Moderate	Moderate
Erosion Factor (K)	.10	.10
Drainage Class	Somewhat Excessively to Excessively	Excessively
Soil Manageability		
Class	3Pex	3Pex
Group	III	III
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	250-750	250-750
Forest Survey Site Class	4	5
Relative Chance of Seedling Survival	Very Low	Very Low
AASHTO: Surface	A-1	A-4
Subsurface	A-2-4	A-4
Unified: Surface	SP, GW	ML
Subsurface	SM	ML
Inclusions:	15% soils similar to Redcap with pumice overburden; rock outcrop.	

174 Riverwash

Elevation: 700 to 2,000 feet

Annual Precipitation: 30 to 60 inches

Riverwash deposits

Soil Map Unit
Components

Approximate
Proportion

65%

Landscape Position

Stream channels.

Slope

Typical Vegetation

Mostly bare, with scattered riparian vegetation.

Soil Profile Description

Sand, gravels, cobbles and stones on nearly level to moderately sloping terrain adjacent to rivers and streams.

Soil Qualities and Management Interpretations

Soil Depth and Parent
Material

Mixed alluvium.

Available Water Capacity
Total
Upper 20 inches

Infiltration Rate

Very Rapid

Hydrologic Soil Group

A

Permeability Class

Very Rapid

Erosion Hazard,
Maximum

Erosion Factor (K)

Drainage Class

Soil Manageability
Class
Group

Range Type

Water (7)

Range Site

none

Annual Forage (lb/acre)

2

Forest Survey Site
Class

Relative Chance of
Seedling Survival

AASHTO: Surface
Subsurface

A-1

A-1

Unified: Surface
Subsurface

GP, GW

GM or GC

Inclusions:

35% Soils formed in recent water deposited sediments are present on floodplains and alluvial fan footslopes; soils with a slight or moderate clay increase in the subsoil are present on terraces.

175 Rock outcrop-Teewinot family association, 50 to 90 percent slopes

Elevation: 6,200 to 8,500 feet Annual Precipitation: 60 to 110 inches	
Soil Map Unit Components	Rock outcrop Teewinot family
Approximate Proportion	60% 30%
Landscape Position	Ridges, cliffs and peaks. Mountain sideslopes and ridges.
Slope	50 to 90 percent
Typical Vegetation	Red fir, mountain hemlock, western white pine, pinemat manzanita, brewer spruce, thinleaf huckleberry, phlox, rush, penstemon, sedum, sedge.
Soil Profile Description	
Surface Layer	0-9 inches. Very dark gray extremely gravelly loam; weak very fine granular structure; very strongly acid.
Subsoil	
Substratum or Parent Material	9+ inches. Hard mafic plutonic or metamorphic rock.
Soil Qualities and Management Interpretations	
Soil Depth and Parent Material	Mafic plutonic or metamorphic rock. Less than 20 inches. Mafic, metamorphic rocks.
Available Water Capacity	
Total	1.0 Max.
Upper 20 inches	1.0
Infiltration Rate	Moderately Slow
Hydrologic Soil Group	D
Permeability Class	Moderate to Rapid
Erosion Hazard, Maximum	High
Erosion Factor (K)	.05
Drainage Class	Excessively
Soil Manageability Class	4EPX
Group	IV
Range Type	Waste and Barren (7) Conifer (6)
Range Site	IX
Annual Forage (lb/acre)	2 150-550
Forest Survey Site Class	5 to 6
Relative Chance of Seedling Survival	Very Low
AASHTO: Surface	A-1
Subsurface	
Unified: Surface	GM,GC
Subsurface	
Inclusions:	10% Talus; soils similar to Teewinot family, lacking a dark surface horizon; Endlich family.

176 Rogue-Jayar families association, 30 to 50 percent slopes

Soil Map Unit Components	Elevation: 4,800 to 6,500 feet Annual Precipitation: 50 to 60 inches		
	Rogue family	Jayar family	
	Approximate Proportion	60%	20%
	Landscape Position	Mountain sideslopes and ridges.	Mountain sideslopes.
	Slope	30 to 50 percent	30 to 50 percent
	Typical Vegetation	White fir, Douglas-fir, madrone, incense cedar, greenleaf manzanita, deerbrush, squaw carpet.	Ponderosa pine, white fir, Douglas-fir, red fir, snowberry, currant.

Soil Profile Description

Surface Layer	0-2 inches. Light olive brown loamy sand; weak very fine granular structure; slightly acid.	0-2 inches. Brown very gravelly loam; strong very fine and fine granular structure; slightly acid.
Subsoil	2-29 inches. Yellowish brown sandy loam; weak fine and medium subangular blocky structure; neutral.	2-24 inches. Yellowish brown very gravelly loam; moderate fine and very fine subangular blocky structure to massive; slightly acid.
Substratum or Parent Material	29+ inches. Weathered granitic rock.	24-34 inches. Pale yellow very gravelly sandy loam; massive; slightly acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-60 inches. Weathered granitic rock.	20-60 inches. Weathered granitic rock.
Available Water Capacity		
Total	2.5-4.5	1.4-4.2
Upper 20 inches	1.9	1.8
Infiltration Rate	Moderately Rapid	Moderately Rapid
Hydrologic Soil Group	B	B
Permeability Class	Moderately Rapid to Rapid	Moderate to Moderately Rapid
Erosion Hazard, Maximum	High	Moderate
Erosion Factor (K)	.15	.10
Drainage Class	Well	Well
Soil Manageability		
Class	3Epx	3epx
Group	III	III
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	250-750	250-750
Forest Survey Site Class	3 to 4	3 to 4
Relative Chance of Seedling Survival	Low	Low
AASHTO:		
Surface	A-2-4	A-4
Subsurface	A-2-4	A-2-4
Unified:		
Surface	SM	ML
Subsurface	SM	SM
Inclusions:	20% Lithic Xerumbrepts; shallow soils similar to Rogue and Jayar; rock outcrop.	

177 Ruclick-Cowiche families association, 2 to 9 percent slopes

Elevation: 4,200 to 4,600 feet Annual Precipitation: 9 to 12 inches	
Soil Map Unit Components	Ruclick family Cowiche family
Approximate Proportion	45% 40%
Landscape Position	Volcanic mountain sideslopes and lava flows.
Slope	2 to 9 percent Volcanic upland terraces and lava flows.
Typical Vegetation	2 to 9 percent Ponderosa pine, juniper, sagebrush, rabbitbrush, perennial grasses.
	Ponderosa pine, juniper, big sagebrush, rabbitbrush, bitterbrush, stipa, Idaho fescue, bottlebrush squirreltail.
Soil Profile Description	
Surface Layer	0-5 inches. Brown sandy loam; moderate coarse platy structure; slightly acid. 0-8 inches. Brown silt loam; moderate fine medium and coarse platy structure; slightly acid.
Subsoil	5-34 inches. Grayish brown stony sandy clay loam; moderate medium subangular blocky structure; neutral. 8-42 inches. Brown sandy clay loam; weak medium subangular blocky structure; neutral.
Substratum or Parent Material	34+ inches. Hard basaltic rock. 42+ inches. Hard andesitic and basaltic rock.
Soil Qualities and Management Interpretations	
Soil Depth and Parent Material	20-40 inches. Hard basaltic bedrock. 40-60 inches. Andesitic and basaltic bedrock.
Available Water Capacity	
Total	2.1-4.1 7.0-10.6
Upper 20 inches	2.1 2.9
Infiltration Rate	Moderately Rapid Moderate
Hydrologic Soil Group	C B
Permeability Class	Slow to Moderately Slow Moderately Slow to Moderately Rapid
Erosion Hazard, Maximum	Moderate High
Erosion Factor (K)	.20 .37
Drainage Class	Well Well
Soil Manageability	
Class	2epx 3Ex
Group	II III
Range Type	Conifer (6) Conifer (6)
Range Site	III III
Annual Forage (lb/acre)	250-750 250-750
Forest Survey Site Class	7 6
Relative Chance of Seedling Survival	Low Very Low
AASHTO: Surface	A-2-4 A-4
Subsurface	A-7 A-2-6
Unified: Surface	SC ML
Subsurface	CH SC
Inclusions:	15% rock outcrop, soils that have a thick dark surface horizon that has a high amount of organic carbon.

178 Ruclick-Deven families complex, 0 to 9 percent slopes

Elevation: 4,200 to 4,800 feet Annual Precipitation: 9 to 12 inches

Ruclick family

Deven family

Soil Map Unit Components

Approximate Proportion

50%

30%

Landscape Position

Lava flows.

Lava flows.

Slope

0 to 5 percent

0 to 9 percent

Typical Vegetation

Juniper, big sagebrush, western mountain mahogany, rubber rabbitbrush.

Juniper, big sagebrush, western mountain mahogany, rubber rabbitbrush.

Soil Profile Description

Surface Layer

0-5 inches. Brown sandy loam; moderate coarse platy structure; slightly acid.

0-1 inch. Brown loamy sand; weak very fine granular structure; slightly acid.

Subsoil

5-34 inches. Grayish brown stony sandy clay loam; moderate medium subangular blocky structure; neutral.

1-15 inches. Dark grayish brown clay loam; moderate medium and fine subangular blocky structure; slightly acid.

Substratum or Parent Material

34+ inches. Hard basaltic rock.

15+ inches. Hard basaltic rock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

20-40 inches. Hard basaltic rock.

Less than 20 inches. Hard basaltic rock.

Available Water Capacity

Total

2.1-4.1

2.5

Upper 20 inches

2.1

2.2

Infiltration Rate

Moderately Rapid

Moderately Rapid

Hydrologic Soil Group

C

D

Permeability Class

Slow to Moderately Slow

Moderately slow

Erosion Hazard, Maximum

Moderate

High

Erosion Factor (K)

.20

.15

Drainage Class

Well

Well

Soil Manageability

Class

2epx

3Epx

Group

II

III

Range Type

Juniper (9)

Juniper (9)

Range Site

IV

IV

Annual Forage (lb/acre)

250-600

250-600

Forest Survey Site Class

7

7

Relative Chance of Seedling Survival

Very Low

Very Low

AASHTO: Surface
Subsurface

A-2-4
A-7

A-4
A-7

Unified: Surface
Subsurface

SC
CH

ML
CH

Inclusions:

20% Rock outcrop, and soils with a thick dark surface horizon and a significant clay increase in the subsoil.

179 Ruclick-Deven families complex, 15 to 30 percent slopes

Soil Map Unit Components	Elevation: 4,500 to 5,200 feet	Annual Precipitation: 9 to 12 inches	
	Ruclick family	Deven family	
	Approximate Proportion	60%	25%
	Landscape Position	Volcanic mountain sideslopes.	Volcanic mountain sideslopes.
	Slope	15 to 30 percent	15 to 30 percent
Typical Vegetation	Juniper, big sagebrush, western mountain mahogany, rubber rabbitbrush.	Juniper, big sagebrush, western mountain mahogany, rubber rabbitbrush.	

Soil Profile Description

Surface Layer	0-5 inches. Brown sandy loam; moderate coarse platy structure; slightly acid.	0-1 inches. Brown loamy sand; weak very fine granular structure; slightly acid.
Subsoil	5-34 inches. Grayish brown stony sandy clay loam; moderate medium subangular blocky structure; neutral.	1-15 inches. Dark grayish brown clay loam; moderate medium and fine subangular blocky structure; slightly acid.
Substratum or Parent Material	34+ inches. Hard basaltic rock.	15+ inches. Hard basaltic rock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-40 inches. Hard basaltic rock.	Less than 20 inches. Hard basaltic rock.
Available Water Capacity		
Total	2.1-4.1	2.5
Upper 20 inches	2.1	2.2
Infiltration Rate	Moderately Rapid	Moderately Rapid
Hydrologic Soil Group	C	D
Permeability Class	Slow to Moderately Slow	Moderately Slow
Erosion Hazard, Maximum	High	High
Erosion Factor (K)	.20	.15
Drainage Class	Well	Well
Soil Manageability		
Class	3Epx	3Epx
Group	III	III
Range Type	Juniper (9)	Juniper (9)
Range Site	IV	IV
Annual Forage (lb/acre)	250-600	250-600
Forest Survey Site Class	7	7
Relative Chance of Seedling Survival	Very Low	Very Low
AASHTO: Surface	A-2-4	A-4
Subsurface	A-7	A-7
Unified: Surface	SC	ML
Subsurface	CH	CH
Inclusions:	15% Rock outcrop; soils similar to Deven with more rock fragments; frigid soils in isolated areas.	

180 Sheld-Ille families complex, 5 to 50 percent slopes

Elevation: 5,500 to 6,800 feet Annual Precipitation: 20 to 40 inches

Soil Map Unit Components

	Sheld family	Ille family
Approximate Proportion	50%	35%
Landscape Position	Mountain sideslopes and volcanic uplands.	Mountain sideslopes and volcanic uplands.
Slope	15 to 50 percent	5 to 30 percent
Typical Vegetation	Mainly white fir with red fir, Douglas-fir, ponderosa pine, snowbrush, chinquapin, squaw carpet, manzanita.	Mainly white fir with red fir, Douglas-fir, ponderosa pine, snowbrush, greenleaf manzanita, squaw carpet.

Soil Profile Description

Surface Layer	0-11 inches. Brown sandy loam; weak fine granular structure; strongly acid.	0-12 inches. Grayish brown sandy loam; weak medium granular structure; slightly acid.
Subsoil	11-34 inches. Reddish brown very stony fine sandy loam; weak medium subangular blocky structure; slightly acid.	12-60+ inches. Yellowish brown sandy loam; massive; slightly acid.
Substratum or Parent Material	34+ inches. Volcanic ash, colluvium, tuff or igneous rock.	

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-60 inches. Ash over colluvium, tuff, basalt.	60+ inches. Ash over colluvium, tuff, basalt.
Available Water Capacity		
Total	1.8-4.6	4.2
Upper 20 inches	1.4	2.0
Infiltration Rate	Moderately Rapid	Rapid
Hydrologic Soil Group	B	B
Permeability Class	Moderate to Rapid	Moderate to Moderately Rapid
Erosion Hazard, Maximum	Moderate	Moderate
Erosion Factor (K)	.17	.15
Drainage Class	Well	Well
Soil Manageability		
Class	3epx	2epx
Group	III	II
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	250-750	250-750
Forest Survey Site Class	4 to 5	4
Relative Chance of Seedling Survival	Low	Low
AASHTO:		
Surface	A-2-4	A-2-4
Subsurface	A-4	A-2-4
Unified:		
Surface	SM	SM
Subsurface	SM	SM
Inclusions:	15% Rock outcrop, and soils with a thick dark surface horizon and a significant clay increase in the subsoil.	

181 Sheld family-Lava flow complex, 30 to 70 percent slopes

Soil Map Unit Components

Elevation: 5,000 to 6,800 feet Annual Precipitation: 20 to 40 inches
Sheld family **Lava flows**

Approximate Proportion

50%

35%

Landscape Position

Mountain sideslopes and lava flows.

Slope

30 to 70 percent

Typical Vegetation

Ponderosa pine, white fir, greenleaf manzanita, squaw carpet.

Soil Profile Description

Surface Layer

0-11 inches. Brown sandy loam; weak fine granular structure; strongly acid.

Subsoil

11-34 inches. Reddish brown very stony fine sandy loam; weak medium subangular blocky structure; slightly acid.

Substratum or Parent Material

34+ inches. Hard fractured andesite.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

40-60 inches. Hard, fractured andesite.

Available Water Capacity

Total

3.0-4.4

Upper 20 inches

1.4

Infiltration Rate

Moderately Rapid

Hydrologic Soil Group

B

Permeability Class

Moderate to Rapid

Erosion Hazard, Maximum

Moderate to High

Erosion Factor (K)

.17

Drainage Class

Well

Soil Manageability

Class

3EXp

Group

III

Range Type

Conifer (6)

Waste & Barren (7)

Range Site

IX

none

Annual Forage (lb/acre)

150-550

2

Forest Survey Site Class

4

Relative Chance of Seedling Survival

Low

AASHTO: Surface Subsurface

A-2-4

A-4

Unified: Surface Subsurface

SM

SM

Inclusions:

15% Soils similar to Sheld with fewer rock fragments; soils similar to Sheld without a dark surface horizon.

182 Skalan-Clallam, deep families association, 30 to 70 percent slopes

Soil Map Unit Components	Elevation: 1,500 to 4,800 feet	Annual Precipitation: 45 to 65 inches	
	Skalan family	Clallam family, deep	
	Approximate Proportion	70%	20%
	Landscape Position	Mountain sideslopes.	Mountain sideslopes.
	Slope	30 to 70 percent	30 to 70 percent
Typical Vegetation	Tanoak, madrone, bigleaf maple, Douglas-fir, sugar pine, thimbleberry, poison oak, snowberry, sword fern, twin flower.	Douglas-fir, sugar pine, tanoak, madrone, longleaf mahonia, modesty flower, deerbrush, bluegrass, bracken fern.	

Soil Profile Description

Surface Layer	0-5 inches. Brown very gravelly loam; strong very fine crumb structure; medium acid.	0-7 inches. Grayish brown very gravelly loam; strong very fine granular structure; slightly acid.
Subsoil	5-26 inches. Light reddish brown very gravelly loam; weak medium subangular blocky structure to massive; slightly acid.	7-30 inches. Light yellowish brown very gravelly loam; weak fine subangular blocky structure; medium acid.
Substratum or Parent Material	26-32 inches. Light yellowish brown very gravelly loam; massive; medium acid.	30-42 inches. Very pale brown very gravelly clay loam; massive; medium acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-40 inches. Fractured metamorphic rock.	40-60 inches. Fractured metamorphic rock.
Available Water Capacity		
Total	1.6-3.2	3.3-5.1
Upper 20 inches	1.7	1.7
Infiltration Rate	Moderate	Moderate
Hydrologic Soil Group	B	B
Permeability Class	Moderately Slow to Moderately Rapid	Moderately Slow
Erosion Hazard, Maximum	High	High
Erosion Factor (K)	.10	.10
Drainage Class	Well	Well
Soil Manageability		
Class	3Epx	3Epx
Group	III	III
Range Type	Broadleaf Trees (10)	Conifer (6)
Range Site	VI	IX
Annual Forage (lb/acre)	210-350	150-550
Forest Survey Site Class	3 to 4	3
Relative Chance of Seedling Survival	Moderate	Moderate
AASHTO: Surface	A-4	A-4
Subsurface	A-4	A-4
Unified: Surface	GM	GM
Subsurface	GM	GM
Inclusions:	10% Rock outcrop and Deadwood family.	

183 Skalan-Clallam, deep-Decy families association, 15 to 70 percent slopes

	Elevation: 1,500 to 5,200 feet	Annual Precipitation: 30 to 55 inches	
Map Unit Components	Skalan family	Clallam family, deep	Decy family
Approx. Proportion	40%	25%	20%
Landscape Position	Mountain sideslopes and landslides.	Mountain sideslopes and landslide escarpments.	Mountain sideslopes and landslide benches.
Slope	15 to 50 percent	30 to 70 percent	30 to 70 percent
Typical Vegetation	Douglas-fir, ponderosa pine, incense cedar, sugar pine, white fir, black oak, madrone, deerbrush, white leaf and pinemat manzanita, vetch, snowberry, fescue.	Douglas-fir, ponderosa pine, sugar pine, incense cedar, white fir, black oak, live oak, madrone, deerbrush, white leaf manzanita, vetch, bedstraw.	Douglas-fir, white fir, incense cedar, ponderosa pine, sugar pine, madrone, black oak, deerbrush, white leaf manzanita, Oregon grape, snowberry.

Soil Profile Description

Surface Layer	0-5 inches. Brown very gravelly loam; strong very fine crumb structure; medium acid.	0-7 inches. Grayish brown very gravelly loam; strong very fine granular structure; slightly acid.	0-13 inches. Dark grayish brown very gravelly loam; weak fine granular structure; neutral.
Subsoil	5-26 inches. Light reddish brown very gravelly loam; weak medium subangular blocky structure to massive; slightly acid.	7-30 inches. Light yellowish brown very gravelly loam; weak fine subangular blocky structure; medium acid.	13-60+ inches. Light olive gray very stony loam; moderate medium subangular blocky structure; slightly acid.
Substratum or Parent Material	26-32 inches. Light yellowish brown very gravelly loam; massive; medium acid.	30-42 inches. Very pale brown very gravelly clay loam; massive; medium acid.	

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-60 inches. Highly fractured mica schist.	40-60 inches. Highly fractured mica schist.	40-60+ inches. Highly fractured mica schist.
Available Water Capacity			
Total	2.6-6.0	2.6-4.8	2.6-4.8
Upper 20 inches	1.7	1.7	1.3
Infiltration Rate	Moderate	Moderately Rapid	Moderate
Hydrologic Soil Group	B	B	B
Permeability Class	Moderate	Moderate to Rapid	Moderate
Max. Erosion Hazard	High	Moderate	Moderate
Erosion Factor (K)	.37	.10	.10
Drainage Class	Well	Well	Well
Soil Manageability			
Class	3Epx	3epx	3epx
Group	III	III	III
Range Type	Conifer (6)	Conifer (6)	Conifer (6)
Range Site	IX	IX	IX
Annual Forage (lb/acre)	250-750	150-550	150-550
Survey Site Class	2 to 3	3 to 4	3 to 4
Seedling Survival	Moderate to Low	Moderate to Low	Moderate to Low
AASHTO: Surface	A-4	A-4	A-4
Subsurface	A-4	A-4	A-4
Unified: Surface	ML	ML	ML
Subsurface	ML	ML	ML
Inclusions:	15% Deadwood family; soils similar to Decy family with a thicker dark surface horizon; Holland family; rock outcrop.		

184 Skalan family-Lithic Haploxeralfs association, 30 to 90 percent slopes

Soil Map Unit Components	Elevation: 1,500 to 5,200 feet	Annual Precipitation: 25 to 50 inches	
	Skalan family	Lithic Haploxeralfs	
	Approximate Proportion	50%	35%
	Landscape Position	Mountain sideslopes.	Mountain sideslopes.
	Slope	30 to 70 percent	50 to 90 percent
Typical Vegetation	Douglas-fir, ponderosa pine, incense cedar, white fir, canyon live oak, bush chinquapin, greenleaf manzanita, Idaho fescue, stipa, bottlebrush squirreltail.	Ponderosa pine, Oregon white oak, buckbrush, greenleaf manzanita, Idaho fescue, bottlebrush squirreltail, cheatgrass, bracken fern, yerba santa, wild buckwheat.	
Soil Profile Description			
Surface Layer	0-5 inches. Brown very gravelly loam; strong very fine crumb structure; medium acid.	0-10 inches. Light yellowish brown very gravelly loam; moderate very fine and fine subangular blocky structure; slightly acid.	
Subsoil	5-26 inches. Light reddish brown very gravelly loam; weak medium subangular blocky structure to massive; slightly acid.	10-13 inches. Light yellowish brown very gravelly clay loam; moderate fine subangular blocky structure; neutral.	
Substratum or Parent Material	26-32 inches. Light yellowish brown very gravelly loam; massive; medium acid.	13+ inches. Hard fractured metamorphic rock.	
Soil Qualities and Management Interpretations			
Soil Depth and Parent Material	20-40 inches. Fractured metamorphic rock.	Less than 20 inches. Metasedimentary rock.	
Available Water Capacity			
Total	1.6-3.2	1.8 Max.	
Upper 20 inches	1.7	1.8	
Infiltration Rate	Moderate	Moderate	
Hydrologic Soil Group	B	C	
Permeability Class	Moderately Slow to Moderately Rapid	Moderately Slow to Moderately Rapid	
Erosion Hazard, Maximum	High	High	
Erosion Factor (K)	.10	.10	
Drainage Class	Well	Well	
Soil Manageability			
Class	3Epx	4epx	
Group	III	IV	
Range Type	Conifer (6)	Browse-Mtn Shrub (5) and Chaparral	
Range Site	IX	VI	
Annual Forage (lb/acre)	150-550	100-300	
Forest Survey Site Class	4 to 5	5	
Relative Chance of Seedling Survival	Low to Moderate	Low to Very Low	
AASHTO: Surface	A-4	A-4	
Subsurface	A-4	A-7	
Unified: Surface	GM	GM	
Subsurface	GM	SC,CL	
Inclusions:	15% Lithic Mollic Haploxeralfs; Deadwood family; Clallam family; rock outcrop.		

185 Skalan family-Lithic Mollic Haploxeralfs association, 30 to 70 percent slopes

Soil Map Unit Components	Elevation: 2,500 to 4,800 feet	Annual Precipitation: 30 to 40 inches
	Skalan family	Lithic Mollic Haploxeralfs
Approximate Proportion	50%	30%
Landscape Position	Mountain sideslopes.	Mountain sideslopes and ridge tops.
Slope	30 to 50 percent	50 to 70 percent
Typical Vegetation	Mixed conifer forest with black oak, Oregon white oak, western mountain mahogany, whiteleaf manzanita, berberis, perennial grasses.	Mostly gravel covered bare ground with scattered Jeffrey pine, Douglas-fir, canyon live oak, greenleaf manzanita, silktassle, berberis.

Soil Profile Description

Surface Layer	0-5 inches. Brown very gravelly loam; strong very fine crumb structure; medium acid.	0-3 inches. Brown very gravelly sandy loam; weak fine subangular blocky structure; medium acid.
Subsoil	5-26 inches. Light reddish brown very gravelly loam; weak medium subangular blocky structure to massive; slightly acid.	3-14 inches. Brown very gravelly loam; weak fine subangular blocky structure; medium acid.
Substratum or Parent Material	26-32 inches. Light yellowish brown very gravelly loam; massive; medium acid.	14+ inches. Hard, fractured metamorphic rock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-40 inches. Fractured metamorphic rock.	Less than 20 inches. Metamorphic rock.
Available Water Capacity		
Total	1.6-3.2	1.5 Max.
Upper 20 inches	1.7	1.5
Infiltration Rate	Moderate	Moderately Rapid to Rapid
Hydrologic Soil Group	B	C
Permeability Class	Moderately Slow to Moderately Rapid	Moderately Slow to Moderate
Erosion Hazard, Maximum	High	High
Erosion Factor (K)	.10	.10
Drainage Class	Well	Well
Soil Manageability		
Class	3Ep	3Ep
Group	III	III
Range Type	Conifer (6)	Browse-Mtn Shrub (5) and Chaparral
Range Site	IX	VI
Annual Forage (lb/acre)	250-750	100-300
Forest Survey Site Class	4 to 5	5
Relative Chance of Seedling Survival	Low to Moderate	Low to Very Low
AASHTO:		
Surface	A-4	A-1
Subsurface	A-4	A-4
Unified:		
Surface	GM	GM,SM
Subsurface	GM	GM
Inclusions:	20% Bluesprin family; Holland family; Deadwood family.	

186 Tallac-Nanny families association, 9 to 30 percent slopes

Elevation: 5,200 to 6,200 feet Annual Precipitation: 40 to 90 inches

Soil Map Unit Components

Tallac family

Nanny family

Approximate Proportion

70%

25%

Landscape Position

Ground moraines.

Lateral moraines.

Slope

9 to 30 percent

9 to 30 percent

Typical Vegetation

Alders, willows, forbs, grasses and scattered red fir and white fir.

Grasses, forbs, shrubs, few red fir, white fir, Douglas-fir.

Soil Profile Description

Surface Layer

0-3 inches. Very dark grayish brown loam; weak fine granular structure; medium acid.

0-12 inches. Dark brown very gravelly sandy loam; weak very fine granular structure; medium acid.

Subsoil

3-25 inches. Dark brown sandy loam; weak medium granular structure; slightly acid.

12-46 inches. Very pale brown very gravelly sandy loam; weak fine subangular blocky structure; medium acid.

Substratum or Parent Material

25+ inches. Glacial till.

46+ inches. Glacial till.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material

20-60 inches in glacial till.

Greater than 60 inches in glacial till.

Available Water Capacity

Total

2.6-6.7

3.0

Upper 20 inches

1.4

1.7

Infiltration Rate

Moderate

Moderately Rapid

Hydrologic Soil Group

B

B

Permeability Class

Moderate to Moderately Rapid

Moderate to Moderately Rapid

Erosion Hazard, Maximum

Moderate

Moderate

Erosion Factor (K)

.20

.10

Drainage Class

Well

Well

Soil Manageability

Class

2epx

3Pex

Group

II

III

Range Type

Perennial Forbs (3)

Meadow (2)

Range Site

II & VIII

II

Annual Forage (lb/acre)

125-400

760-1,200

Forest Survey Site Class

3

4

Relative Chance of Seedling Survival

Low

Low to Very Low

AASHTO: Surface Subsurface

A-4

A-2-4

A-2-4

A-2-4

Unified: Surface Subsurface

ML

SM

SM

SM

Inclusions:

5% Rock outcrop.

187 Tallac family-Ultic Haploxeralfs association, 15 to 50 percent slopes

Soil Map Unit Components	Elevation: 4,800 to 6,800 feet	Annual Precipitation: 55 to 70 inches
	Tallac family	Ultic Haploxeralfs
Approximate Proportion	50%	35%
Landscape Position	Mountain sideslopes and ridges.	Broad mountain sideslopes and landslide benches.
Slope	15 to 50 percent	15 to 30 percent
Typical Vegetation	White fir, incense cedar, red fir, Douglas-fir, currant, snowberry, lupine, bedstraw, perennial grasses.	White fir, red fir, incense cedar, Douglasfir, currant, willow, snowberry, chinquapin, lupine, penstemon, pussy paws, vetch, annual and perennial grasses.

Soil Profile Description

Surface Layer	0-3 inches. Very dark grayish brown loam; weak fine granular structure; medium acid.	0-2 inches. Yellowish brown gravelly loam; moderate fine granular structure; slightly acid.
Subsoil	3-25 inches. Dark brown sandy loam; weak medium granular structure; slightly acid.	2-35 inches. Brown gravelly loam; moderate fine subangular blocky structure; slightly acid.
Substratum or Parent Material	25+ inches. Hard highly fractured mica schist.	35+ inches. Highly fractured mica schist.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40-60 inches. Highly fractured mica schist.	20-60 inches. Highly fractured mica schist.
Available Water Capacity		
Total	4.3-6.1	2.4-4.0
Upper 20 inches	1.4	1.4
Infiltration Rate	Moderate	Moderate
Hydrologic Soil Group	B	B
Permeability Class	Moderate	Moderately Slow to Moderately Rapid
Erosion Hazard, Maximum	Moderate	Moderate
Erosion Factor (K)	.28	.24
Drainage Class	Well	Well
Soil Manageability		
Class	3epx	2epx
Group	III	II
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	250-750	250-750
Forest Survey Site Class	2 to 3	3 to 4
Relative Chance of Seedling Survival	Low	Moderate to Low
AASHTO: Surface	A-4	A-4
Subsurface	A-4	A-4
Unified: Surface	ML	ML
Subsurface	ML	ML
Inclusions:	15% Wet areas and meadows; Nanny family; rock outcrop.	

188 Tangle family, 15 to 50 percent slopes.

Elevation: 4,800 to 6,800 feet Annual Precipitation: 45 to 60 inches

Tangle family

Soil Map Unit Components	
Approximate Proportion	75%
Landscape Position	Mountain sideslopes and landslide benches.
Slope	15 to 50 percent
Typical Vegetation	Mixed conifer forest, Jeffrey pine, huckleberry oak, beargrass.

Soil Profile Description

Surface Layer	0-6 inches. Dark brown very gravelly sandy loam; weak very fine granular structure; medium acid.
Subsoil	6-57 inches. Pale brown very cobbly sandy loam; moderate medium subangular blocky structure; slightly acid.
Substratum or Parent Material	57+ inches. Hard highly fractured serpentinitic peridotite.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40-60 inches. Fractured serpentinitic peridotite.
Available Water Capacity	
Total	1.6-5.2
Upper 20 inches	1.1
Infiltration Rate	Moderately Rapid
Hydrologic Soil Group	B
Permeability Class	Slow to Very Slow
Erosion Hazard, Maximum	Moderate to High
Erosion Factor (K)	.10
Drainage Class	Well
Soil Manageability	
Class	3Epx
Group	III
Range Type	Conifer (6)
Range Site	IX
Annual Forage (lb/acre)	250-750
Forest Survey Site Class	3 to 4
Relative Chance of Seedling Survival	Low to Moderate
AASHTO: Surface	A-2-4
Subsurface	A-7
Unified: Surface	SC
Subsurface	CH
Inclusions:	25% Toadlake family; Lithic Argixerolls; rock outcrop; boulder and stone fields; organic soils in wet meadows on landslide benches.

189 Teewinot-Endlich families association, 30 to 90 percent slopes

Soil Map Unit Components	Elevation: 6,200 to 8,300 feet Annual Precipitation: 60 to 90 inches	
	Teewinot family	Endlich family
	Approximate Proportion	50% 30%
	Landscape Position	Upper mountain sideslopes and ridges. Mountain sideslopes and footslopes.
	Slope	50 to 90 percent 30 to 70 percent
Typical Vegetation	Red fir, mountain hemlock, western white pine, pinemat manzanita. Red fir, mountain hemlock, western white pine, pinemat manzanita.	
Soil Profile Description		
Surface Layer	0-9 inches. Very dark gray extremely gravelly loam; weak very fine granular structure; very strongly acid.	0-4 inches. Dark brown loam; weak medium granular structure; extremely acid.
Subsoil		4-21 inches. Yellowish brown very gravelly to extremely gravelly cobbly loam; weak fine granular structure; very strongly acid.
Substratum or Parent Material	9+ inches. Hard granitic rock.	21-48 inches. Light yellowish brown extremely cobbly loamy fine sand; massive; very strongly acid.
Soil Qualities and Management Interpretations		
Soil Depth and Parent Material	Less than 20 inches. Hard granitic rock.	Greater than 60 inches. Weathered granitic rock.
Available Water Capacity		
Total	0.4-0.8	3.0
Upper 20 inches	1.0	1.3
Infiltration Rate	Moderate	Moderate
Hydrologic Soil Group	B	B
Permeability Class	Moderate to Rapid	Moderate to Moderately Rapid
Erosion Hazard, Maximum	Very High	High
Erosion Factor (K)	.05	.32
Drainage Class	Excessively	Well
Soil Manageability		
Class	4EPx	3EPx
Group	IV	III
Range Type	Conifer (6)	Conifer (6)
Range Site	IX	IX
Annual Forage (lb/acre)	2	150-550
Forest Survey Site Class	5 to 7	4
Relative Chance of Seedling Survival	Very Low	Very Low
AASHTO: Surface	A-4	A-4
Subsurface	A-4	A-4
Unified: Surface	ML	ML
Subsurface	ML	SM
Inclusions:	20% Deeper soils similar to Teewinot family; shallow soils similar to Endlich family; rock outcrop; wet areas and meadows.	

190 Teewinot family-Rock outcrop association, 50 to 90 percent slopes

Soil Map Unit Components	Elevation: 6,200 to 8,500 feet	Annual Precipitation: 80 to 110 inches
	Teewinot family	Rock outcrop
	Approximate Proportion	60%
	Landscape Position	Mountain sideslopes and ridges.
	Slope	50 to 90 percent
Typical Vegetation	Red fir, mountain hemlock, western white pine, pinemat manzanita, brewer spruce, thinleaf huckleberry, phlox, rush, penstemon, sedum, sedge.	

Soil Profile Description

Surface Layer	0-9 inches. Very dark gray extremely gravelly loam; weak very fine granular structure; very strongly acid.
Subsoil	
Substratum or Parent Material	9+ inches. Hard mafic or metamorphic rock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	Less than 20 inches. Mafic, metamorphic rock.	
Available Water Capacity		
Total	1.0 Max.	
Upper 20 inches	1.0	
Infiltration Rate	Moderately Slow	
Hydrologic Soil Group	D	
Permeability Class	Moderate to Rapid	
Erosion Hazard, Maximum	High	
Erosion Factor (K)	.05	
Drainage Class	Excessively	
Soil Manageability		
Class	4EPx	
Group	IV	
Range Type	Conifer (6)	Waste & Barren (7)
Range Site	IX	none
Annual Forage (lb/acre)	150-550	2
Forest Survey Site Class	5 to 6	
Relative Chance of Seedling Survival	Very Low	
AASHTO: Surface	A-1	
Subsurface		
Unified: Surface	GM,GC	
Subsurface		
Inclusions:	25% Endlich family and deeper soils similar to Teewinot.	

191 Toadlake family-Lithic Argixerolls association, 30 to 70 percent slopes

Soil Map Unit Components	Elevation: 4,800 to 6,800 feet	Annual Precipitation: 50 to 60 inches	
	Toadlake family	Lithic Argixerolls	
	Approximate Proportion	45%	30%
	Landscape Position	Colluvial footslopes.	Mountain sideslopes.
	Slope	30 to 70 percent	30 to 70 percent
Typical Vegetation	Jeffrey pine, white fir, western white pine, huckleberry oak, pinemat and greenleaf manzanita.	Gravel pavement surface with buckwheat, phlox, grasses, Jeffrey pine, western white pine.	

Soil Profile Description

Surface Layer	0-3 inches. Brown gravelly loam; moderate fine granular structure; slightly acid.	0-5 inches. Brown very gravelly sandy clay loam; weak fine granular structure; neutral.
Subsoil	3-41 inches. Yellowish brown very gravelly clay loam; weak fine and medium granular structure; slightly acid.	5-14 inches. Brown very gravelly silty clay loam; weak to moderate fine subangular blocky structure; neutral.
Substratum or Parent Material	41+ inches. Serpentinic colluvium.	14+ inches. Hard, highly fractured serpentinite.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40-60 inches. Serpentinic colluvium.	Less than 20 inches. Fractured serpentinite.
Available Water Capacity		
Total	3.7-5.5	1.9
Upper 20 inches	1.8	1.9
Infiltration Rate	Moderate	Moderate
Hydrologic Soil Group	B	C
Permeability Class	Moderate to Moderately Slow	Moderately Slow
Erosion Hazard, Maximum	High	High
Erosion Factor (K)	.17	.05
Drainage Class	Well	Somewhat Excessively
Soil Manageability		
Class	3Epx	3Epx
Group	III	III
Range Type	Conifer (6)	Perennial (3) Forbs
Range Site	IX	VIII
Annual Forage (lb/acre)	150-550	75-200
Forest Survey Site Class	4	5 to 7
Relative Chance of Seedling Survival	Moderate to Low	Low
AASHTO: Surface	A-4	A-2-6
Subsurface	A-6	A-7
Unified: Surface	ML-CL	SC
Subsurface	ML-CL	ML-CL
Inclusions:	25% Rock outcrop, talus; soils similar to Lithic Argixerolls without a clay increase in the subsoil.	

192 Trojan-Kilmerque families association, 2 to 9 percent slopes

Soil Map Unit Components	Elevation: 4,600 to 5,000 feet Annual Precipitation: 15 to 25 inches	
	Trojan family	Kilmerque family
	Approximate Proportion	55% 20%
	Landscape Position	Terraces and fans. Volcanic terraces and fans.
	Slope	2 to 9 percent 2 to 9 percent
Typical Vegetation	Scattered ponderosa pine with sagebrush understory and bottlebrush squirreltail.	
	Scattered ponderosa pine with sagebrush understory.	

Soil Profile Description

Surface Layer	0-11 inches. Brown loam; weak very fine granular structure; slightly acid.	0-1 inch. Grayish brown sandy loam; weak fine granular structure; medium acid.
Subsoil	11-58 inches. Pale brown loam; moderate medium subangular blocky structure; slightly acid.	1-15 inches. Grayish brown loamy sand; weak medium subangular blocky structure; neutral.
Substratum or Parent Material	58+ inches. Hard, slightly fractured basalt.	15-63 inches. Pale brown loamy sand; massive; neutral.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40-60+ inches. Fractured basalt.	40-60+ inches. Fractured basalt or andesite.
Available Water Capacity	Total	8.1
	Upper 20 inches	2.8
Infiltration Rate	Moderate	Moderately Rapid
Hydrologic Soil Group	B	B
Permeability Class	Moderately Slow to Moderate	Moderately Rapid to Rapid
Erosion Hazard, Maximum	High	Moderate
Erosion Factor (K)	.28	.05
Drainage Class	Well	Well
Soil Manageability Class	3E	2ep
	III	II
Range Type	Perennial Grasslands (1)	Perennial Grasslands (1)
Range Site	III	III
Annual Forage (lb/acre)	500-800	500-800
Forest Survey Site Class	4	5
Relative Chance of Seedling Survival	Low	Very Low
AASHTO:	Surface	A-4
	Subsurface	A-2-6
Unified:	Surface	ML
	Subsurface	SC
Inclusions:	25% Soils similar to Belzar, but containing fewer rock fragments; soils with a higher clay and rock fragment content in basin areas and depressions; Haplic Durixeralfs; small areas with slopes greater than 9 percent.	

193 Typic Haploxerolls-Lithic Haploxerolls-Rock outcrop complex, 30 to 90 percent slopes

Soil Map Unit Components	Elevation: 1,200 to 5,000 feet		
	Typic Haploxerolls	Lithic Haploxerolls	Rock outcrop
Approx. Proportion	40%	30%	20%
Landscape Position	Mountain sideslopes and colluvial footslopes.	Mountain sideslopes.	
Slope	30 to 70 percent	50 to 90 percent	
Typical Vegetation	Douglas-fir, incense cedar, Pacific yew, bigleaf maple, snowberry, hazelnut, thimbleberry, wild rose, currant, penstemon.	Canyon live oak, madrone, black oak, Douglas-fir, incense cedar, sugar pine, poison oak, western mountain mahogany, annual grasses.	

Soil Profile Description

Surface Layer	0-13 inches. Brown slightly effervescent gravelly loam; strong very fine granular structure; neutral.	0-2 inches. Brown effervescent loam; moderate very fine granular structure; slightly acid.
Subsoil	13-30 inches. Yellowish brown strongly effervescent very gravelly loam; weak fine subangular blocky structure; mildly alkaline.	2-7 inches. Dark yellowish brown effervescent loam; moderate fine subangular blocky structure; neutral.
Substratum or Parent Material	30+ inches. Hard fractured schist or marble.	7+ inches. Hard marble.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-60 inches. Fractured schist or marble.	Less than 20 inches. Light gray, hard marble.
Available Water Capacity		
Total	1.6-4.8	2.2
Upper 20 inches	1.8	2.2
Infiltration Rate	Moderately Rapid	Moderate
Hydrologic Soil Group	B	D
Permeability Class	Moderate	Moderately Slow to Moderately Rapid
Max Erosion Hazard	Moderate to High	High
Erosion Factor (K)	.10	.15
Drainage Class	Well	Somewhat Excessively
Soil Manageability		
Class	3EXp	4EXp
Group	III	IV
Range Type	Conifer (6)	Broadleaf Trees (10)
Range Site	IX	VI
Annual Forage (lb/acre)	150-550	210-350
Survey Site Class	3 to 4	4 to 5
Relative Chance of Seedling Survival	Low to Moderate	Low to Very Low
AASHTO:		
Surface	A-4	A-4
Subsurface	A-4	A-4
Unified:		
Surface	GM	SM,GM,SM-SC
Subsurface	GM	SM,GM,SM-SC
Inclusions:	10% Fragmental soils and soils with a thin dark surface horizon and a clay increase in the subsoil.	

194 Vipont-Hades families association, 15 to 50 percent slopes

Soil Map Unit Components	Elevation: 4,800 to 6,400 feet	Annual Precipitation: 12 to 15 inches
	Vipont family	Hades family
	45%	30%
	Mountain sideslopes.	Volcanic mountain sideslopes.
	15 to 50 percent	15 to 50 percent
Typical Vegetation	Rabbitbrush, Idaho fescue, ponderosa pine, juniper, cheatgrass, poa, mountain mahogany.	Greenleaf manzanita, bitterbrush, mountain mahogany, rabbitbrush, ponderosa pine, juniper.

Soil Profile Description

Surface Layer	0-25 inches. Brown cobbly to stony loam; weak fine platy to weak very fine granular structure; slightly acid.	0-5 inches. Grayish brown gravelly loam; weak fine platy structure; slightly acid.
Subsoil	25-40 inches. Brown very gravelly sandy clay; weak medium subangular blocky structure; neutral.	5-48 inches. Dark brown loam; weak fine subangular blocky structure; neutral.
Substratum or Parent Material	40+ inches. Hard, moderately fractured andesite or basalt.	48+ inches. Hard, moderately fractured basalt.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40-60 inches. Fractured andesite or basalt.	20-60 inches. Fractured andesite or basalt.
Available Water Capacity		
Total	4.3-5.3	5.5-8.3
Upper 20 inches	1.8	2.7
Infiltration Rate	Moderate	Moderate
Hydrologic Soil Group	B	B
Permeability Class	Moderately Slow to Moderate	Moderately Slow to Moderate
Erosion Hazard, Maximum	High	High
Erosion Factor (K)	.20	.15
Drainage Class	Well	Well
Soil Manageability		
Class	3Epx	3Ex
Group	III	III
Range Type	Sagebrush (4)	Browse-Mtn Shrub (5)
Range Site	III	VI
Annual Forage (lb/acre)	200-600	160-500
Forest Survey Site Class	6	5 to 6
Relative Chance of Seedling Survival	Low	Low
AASHTO: Surface	A-4	A-4
Subsurface	A-2-6	A-4
Unified: Surface	ML	ML
Subsurface	SC	ML-CL
Inclusions:	25% Rock outcrop; soils with a thick dark surface horizon that have a high organic-carbon content; Lithic Argixerolls.	

195 Washoe family, 0 to 5 percent slopes

Elevation: 4,400 to 4,800 feet Annual Precipitation: 9 to 12 inches

Washoe family

Soil Map Unit Components	
Approximate Proportion	80%
Landscape Position	Terraces, basin areas and glacial outwash deposits.
Slope	0 to 5 percent
Typical Vegetation	Dwarf and big sagebrush with ponderosa pine, incense cedar, mountain mahogany.

Soil Profile Description

Surface Layer	0-14 inches. Grayish to pale brown loam; massive to weak fine subangular blocky structure; slightly acid.
Subsoil	14-36 inches. Pinkish gray very gravelly sandy clay loam; moderate fine subangular blocky structure; slightly acid.
Substratum or Parent Material	36+ inches. Terrace, colluvium and glacial deposits.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	40-60+ inches in glacial colluvium or outwash.
Available Water Capacity	
Total	3.3-4.3
Upper 20 inches	2.5
Infiltration Rate	Moderate
Hydrologic Soil Group	B
Permeability Class	Moderately Slow to Moderately Rapid
Erosion Hazard, Maximum	High
Erosion Factor (K)	.37
Drainage Class	Well
Soil Manageability	
Class	3Epx
Group	III
Range Type	Sagebrush (4)
Range Site	IV
Annual Forage (lb/acre)	200-600
Forest Survey Site Class	7
Relative Chance of Seedling Survival	Very Low
AASHTO: Surface	A-4
Subsurface	A-2-6
Unified: Surface	ML
Subsurface	SC
Inclusions:	20% Rock outcrop; Lithic Argixerolls; soils with a dark surface horizon and clay increase in the subsoil.

196 Weitchpec family-Lithic Haploxeralfs association, 30 to 90 percent slopes

Soil Map Unit Components	Elevation: 2,000 to 5,200 feet	Annual Precipitation: 30 to 70 inches
	Weitchpec family	Lithic Haploxeralfs
Approximate Proportion	60%	30%
Landscape Position	Mountain sideslopes.	Mountain sideslopes.
Slope	30 to 70 percent	50 to 90 percent
Typical Vegetation	Douglas-fir, sugar pine, ponderosa pine, incense cedar, madrone, tanoak, huckleberry oak, pinemat manzanita, beargrass.	Western serviceberry, huckleberry oak, purple reedgrass, white fir, incense cedar, Jeffrey pine, Douglas-fir.

Soil Profile Description

Surface Layer	0-8 inches. Dark grayish brown very gravelly loam; strong very fine granular structure; medium acid.	0-10 inches. Light yellowish brown very gravelly loam; moderate very fine and fine subangular blocky structure; slightly acid.
Subsoil	8-14 inches. Brownish yellow very gravelly loam; weak fine subangular blocky structure; medium acid.	10-13 inches. Light yellowish brown very gravelly clay loam; moderate fine subangular blocky structure; neutral.
Substratum or Parent Material	14-22 inches. Light yellowish brown extremely gravelly loam; massive; medium acid.	13+ inches. Hard serpentinitic rock.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	20-40 inches. Hard serpentinitic bedrock.	Less than 20 inches. Serpentinitic bedrock.
Available Water Capacity		
Total	1.6-3.2	1.8
Upper 20 inches	0.9	1.8
Infiltration Rate	Moderately Rapid	Moderate
Hydrologic Soil Group	B	D
Permeability Class	Moderate to Rapid	Moderately Slow to Moderately Rapid
Erosion Hazard, Maximum	Moderate	High
Erosion Factor (K)	.10	.10
Drainage Class	Well	Well
Soil Manageability		
Class	3epx	4Epx
Group	III	IV
Range Type	Conifer (6)	Browse-Mtn Shrub (5) and Chaparral
Range Site	IX	VI
Annual Forage (lb/acre)	150-550	100-300
Forest Survey Site Class	4 to 5	5 to 7
Relative Chance of Seedling Survival	Low	Low to Very Low
AASHTO: Surface	A-4	A-4
Subsurface	A-4	A-6
Unified: Surface	ML	GM
Subsurface	ML	SC,CL
Inclusions:	10% Rock outcrop and Guemes family.	

197 Woodseye family-Rock outcrop association, 50 to 90 percent slopes

Soil Map Unit Components	Elevation: 4,800 to 6,800 feet	Annual Precipitation: 60 to 100 inches
	Woodseye family	Rock outcrop
Approximate Proportion	50%	35%
Landscape Position	Mountain sideslopes and ridges.	
Slope	50 to 90 percent	
Typical Vegetation	Huckleberry oak, greenleaf manzanita, bittercherry, snowbrush, buckwheat, Indian paintbrush lupine, red fir, white fir, incense cedar.	

Soil Profile Description

Surface Layer	0-7 inches. Dark grayish brown very gravelly loam; moderate very fine granular structure; strongly acid.
Subsoil	
Substratum or Parent Material	7-19 inches. Brown very gravelly loam; massive; very strongly acid.

Soil Qualities and Management Interpretations

Soil Depth and Parent Material	Less than 20 inches. Metamorphic rock.	
Available Water Capacity		
Total	2.1 Max.	
Upper 20 inches	2.1	
Infiltration Rate	Moderate	
Hydrologic Soil Group	C	
Permeability Class	Moderate	
Erosion Hazard, Maximum	High	
Erosion Factor (K)	.28	
Drainage Class	Well	
Soil Manageability Class	4EXp	
Group	IV	
Range Type	Woodland-Chaparral (5)	Waste & Barren (7)
Range Site	VI	None
Annual Forage (lb/acre)	100-300	2
Forest Survey Site Class	4 to 5	
Relative Chance of Seedling Survival	Low	
AASHTO: Surface	A-4	
Subsurface	A-4	
Unified: Surface	ML,CL-ML	
Subsurface	GM	
Inclusions:	15% Rogue family and Jayar soils on colluvial slopes.	

198 Woodseye-Jayar families association, 30 to 70 percent slopes

Soil Map Unit Components	Elevation: 4,800 to 6,800 feet		Annual Precipitation: 60 to 100 inches			
	Woodseye family		Jayar family			
	Approximate Proportion		60%		25%	
	Landscape Position		Mountain sideslopes and ridges.		Mountain sideslopes.	
	Slope		50 to 70 percent		30 to 70 percent	
Typical Vegetation		Huckleberry oak, greenleaf manzanita, bittercherry, snowbrush, buckwheat, Indian paintbrush lupine, red fir, white fir, incense cedar.		Red fir, mountain hemlock, white fir, snowbrush, sadler oak, princes pine, strawberry shinleaf.		
Soil Profile Description						
Surface Layer		0-7 inches. Dark grayish brown very gravelly loam; moderate very fine granular structure; strongly acid.		0-2 inches. Brown very gravelly loam; strong very fine and fine granular structure; slightly acid.		
Subsoil				2-24 inches. Yellowish brown very gravelly loam; moderate very fine and fine subangular blocky structure; slightly acid.		
Substratum or Parent Material		7-19 inches. Brown very gravelly loam; massive; very strongly acid.		24-34 inches. Pale yellowish very gravelly sandy loam; massive; slightly acid.		
Soil Qualities and Management Interpretations						
Soil Depth and Parent Material		Less than 20 inches. Metamorphic rock.		20-60 inches. Metamorphic rock.		
Available Water Capacity						
Total		2.1 Max.		1.6-3.7		
Upper 20 inches		2.1		1.8		
Infiltration Rate		Moderate		Moderate		
Hydrologic Soil Group		C		B		
Permeability Class		Moderate		Moderate to Moderately Rapid		
Erosion Hazard, Maximum		High		Moderate		
Erosion Factor (K)		.28		.10		
Drainage Class		Well		Well		
Soil Manageability						
Class		3Epx		3epx		
Group		III		III		
Range Type		Browse-Mtn Shrub and Chaparral (5)		Conifer (6)		
Range Site		VI		IX		
Annual Forage (lb/acre)		100-300		150-550		
Forest Survey Site Class		5		3 to 4		
Relative Chance of Seedling Survival		Low		Low		
AASHTO:						
Surface		A-4		A-4		
Subsurface		A-4		A-4		
Unified:						
Surface		ML,CL-ML		GM		
Subsurface		GM		GM		
Inclusions:		15% Rock outcrop; soils similar to Woodseye, with fewer rock fragments in the subsoil; Tallac family.				

199 Mollic Palexeralfs-Mollic Haploxeralfs association, 15 to 50 percent slopes

		Elevation: 5,000 to 6,800 feet	Annual Precipitation: 30 to 50 inches
Soil Map Unit Components		Mollic Palexeralfs	Mollic Haploxeralfs
Approximate Proportion		65%	25%
Landscape Position		Mountain sideslopes, colluvial slopes and broad ridges.	Ridges and mountain sideslopes.
Slope		15 to 50 percent	30 to 50 percent
Typical Vegetation		Jeffrey pine, incense cedar, Douglas-fir, white fir, California fescue, greenleaf manzanita, squaw carpet, California coffeeberry, huckleberry oak.	Perennial grasses, Jeffrey pine, incense cedar, Douglas-fir, white fir, buckbrush, greenleaf manzanita.
Soil Profile Description			
Surface Layer		0-7 inches. Brown very gravelly sandy clay loam; weak fine and medium granular structure; neutral.	0-5 inches. Dark reddish brown gravelly loam; moderate fine and medium granular structure; mildly alkaline.
Subsoil		7-28 inches. Brown gravelly clay; moderate medium and coarse subangular blocky structure; neutral.	5-9 inches. Dark brown silty clay loam; moderate medium subangular blocky structure; neutral.
Substratum or Parent Material		28+ inches. Cemented till.	9+ inches. Cemented till.
Soil Qualities and Management Interpretations			
Soil Depth and Parent Material		20-40 inches. Cemented till.	Less than 20 inches. Cemented till.
Available Water Capacity			
Total		3.2-7.4	1.3-3.1
Upper 20 inches		1.7	2.2
Infiltration Rate		Moderate	Moderate
Hydrologic Soil Group		B	D
Permeability Class		Slow	Moderately Slow
Erosion Hazard, Maximum		High	High
Erosion Factor (K)		.05	.20
Drainage Class		Well	Well
Soil Manageability			
Class		3E	3Ep
Group		III	III
Range Type		Conifer (6)	Conifer (6)
Range Site		IX	IX
Annual Forage (lb/acre)		250-750	250-750
Forest Survey Site Class		4	5 to 7
Relative Chance of Seedling Survival		High to Moderate	Low
AASHTO: Surface		A-6	A-4
Subsurface		A-7	A-7
Unified: Surface		SC	ML-CL
Subsurface		CH	CH
Inclusions:		10% Soils similar to Kang, but occurring at higher elevations; Lithic Argixerolls	

Classification of the Soils

The system of classification used in this survey is that outlined in *Soil Taxonomy* (11) as directed by the National Cooperative Soil Survey. The system consists of six categories. In order of decreasing rank and increasing number of classes, the categories are: order, suborder, great group, subgroup, family, and series.

Orders are distinguished from each other on the basis of narrowly defined sets of identifying or diagnostic characteristics. Of the ten named orders, six are present on this Forest. They are Entisols, Inceptisols, Aridisols, Mollisols, Alfisols, and Ultisols.

Entisols includes those soils of such slight and recent development that only a light-colored surface horizon called an ochric epipedon is present. Profiles of Entisols reflect the characteristics of the parent material for the most part.

Inceptisols are soils with horizons of alteration or concentration with little accumulation of translocated materials other than carbonates and silica. They are moist for at least 90 consecutive days during the growing season. Inceptisols are the most prevalent soils present on this forest.

Aridisols are those soils that have diagnostic horizons, but they are usually dry in all horizons and never moist for as long as 90 consecutive days during the growing season. The few Aridisols that occur on this Forest are located on the east side of the survey area in isolated areas where average annual precipitation is about 12 inches.

Mollisols are those soils with nearly black organic rich surface horizons and high base saturation. They are typically under grassland vegetation, and are usually dry, but not as dry as Aridisols. In this survey, Mollisols were mapped in areas of lower precipitation (less than 35 inches) or where the parent material was high in bases (ultramafic, serpentinitic).

Alfisols includes those soils with subsurface horizons of clay accumulation and medium to high base saturation. They are moist for at least 90 consecutive days during the growing period. Next to Inceptisols, Alfisols are the most prevalent soils on this Forest.

Ultisols differ from Alfisols in that they have a lower base saturation. They form in a warmer wetter climate or on older highly weathered surfaces. They are usually moist for at least 90 consecutive days during the growing season. Ultisols only occur on the extreme western portion of the survey area where the mean annual precipitation is greater than 60 inches.

The orders are further subdivided into narrower and narrower categories. Orders are split up into suborders, which are divided into great groups, then subgroups and finally, into families. At the family level, the particle size class, mineralogy, and soil temperature regime are named to differentiate subgroups unless indicated at higher classification levels. On the Klamath National Forest, the soils have been classified and mapped at the subgroup and family level. Those soils mapped at the subgroup level (such as Lithic Mollic Haploxeralfs or Lithic Xerorthents) were not classified to the family category because they were new unnamed families, there was not enough data or acres of them to propose a new series and management concerns in these areas did not require more detailed mapping.

A further classification category used in more detailed mapping is the soil series (for instance, Holland, Clallam, Aiken, etc.). Since the lowest category the soils in this survey have been classified to is the family level, the soils are named by the representative series of that family. For instance, the family of loamy-skeletal, mixed, mesic Dystric Xerochrepts contain several soil series, one of which is the Clallam series. The soils present in this survey which fit this classification are called Clallam family soils, since Clallam has been named as the representative series for this family.

Table 3 lists the soils on the Klamath classified by soil name. Table 4 is a classification by taxonomic category.

TABLE 3. - Classification of the Soils

Soil Name	Family or Higher Taxonomic Class
Aiken family	Clayey, oxidic, mesic Xeric Haplohumults
Avis	Ashy-skeletal, frigid Dystric Xerorthents
Beaughton	Clayey-skeletal, serpentinitic, mesic Lithic Argixerolls
Belzar	Loamy-skeletal, mixed, frigid Andic Xerochrepts
Bluesprin	Loamy-skeletal, mixed, mesic Ultic Argixerolls
Buell	Loamy-skeletal, mixed Typic Cryumbrepts
Chawanakee	Loamy, mixed, mesic, shallow Dystric Xerochrepts
Clallam	Loamy-skeletal, mixed, mesic Dystric Xerochrepts
Coboc	Fine, kaolinitic, mesic Ultic Palexeralfs
Cowiche	Fine-loamy, mixed, mesic Aridic Argixerolls
Deadfall	Loamy-skeletal, serpentinitic Typic Cryorthents
Deadwood	Loamy-skeletal, mixed, mesic Dystric Lithic Xerochrepts
Decy	Loamy-skeletal, mixed, mesic Typic Xerumbrepts
Deetz	Ashy, mesic Dystric Xeropsamments
De Masters	Fine-loamy, mixed, frigid Pachic Ultic Argixerolls
Deven	Clayey, montmorillonitic, mesic Lithic Argixerolls
Dubakella	Clayey-skeletal, serpentinitic, mesic Mollic Haploxeralfs
Endlich	Loamy-skeletal, mixed Dystric Cryochrepts
Etchen	Loamy-skeletal, mixed, frigid Mollic Haploxeralfs
Gerle	Coarse-loamy, mixed, frigid Typic Xerumbrepts
Gilligan	Coarse-loamy, mixed, mesic Dystric Xerochrepts
Goldridge	Fine-loamy, mixed, mesic Typic Haploxerults
Guemes	Loamy-skeletal, serpentinitic, mesic Typic Haploxeralfs
Hades	Fine-loamy, mixed, frigid Pachic Argixerolls
Helvetia	Fine, mixed, mesic Ultic Argixerolls
Holland	Fine-loamy, mixed, mesic Ultic Haploxeralfs
Iller	Medial over loamy-skeletal, mixed, frigid Andic Xerumbrepts
Inville	Loamy-skeletal, mixed, frigid Ultic Haploxeralfs
Jayar	Loamy-skeletal, mixed, frigid Dystric Xerochrepts
Kang	Clayey-skeletal, serpentinitic, mesic Pachic Argixerolls
Kilmerque	Coarse-loamy, mixed, frigid Ultic Haploxerolls
Merkel	Loamy-skeletal, mixed, frigid Typic Xerochrepts
Morical	Fine-loamy, mixed, mesic Mollic Haploxeralfs
Nanny	Loamy-skeletal, mixed, frigid Typic Xerumbrepts
Neuske	Fine-loamy, mixed, frigid Mollic Haploxeralfs
Olete	Loamy-skeletal, mixed, mesic Typic Xerochrepts
Oosen	Ashy, frigid Dystric Xeropsamments
Ovall	Coarse-loamy, mixed, mesic Typic Xerumbrepts
Parks	Loamy-skeletal, serpentinitic, frigid Typic Xerochrepts
Prather	Clayey, kaolinitic, mesic Xeric Haplohumults
Quam	Fine-silty, mixed, frigid Cumulic Haplaquolls
Redcap	Cindery over medial-skeletal, frigid Dystric Xerorthents
Rogue	Coarse-loamy, mixed, frigid Dystric Xerochrepts
Ruclick	Clayey-skeletal, montmorillonitic, mesic Aridic Argixerolls

Soil Name	Family or Higher Taxonomic Class
Sheld	Medial-skeletal, frigid, Andic Xerumbrepts
Skalan	Loamy-skeletal, mixed, mesic Ultic Haploxeralfs
Smarts	Loamy-skeletal, mixed, frigid Pachic Ultic Argixerolls
Stonewell	Cindery, frigid Dystric Xerorthents
Tallac	Loamy-skeletal, mixed, frigid Pachic Xerumbrepts
Tangle	Clayey-skeletal, serpentinitic, frigid Mollic Palexeralfs
Teewinot	Loamy-skeletal, mixed Lithic Cryumbrepts
Toadlake	Loamy-skeletal, serpentinitic, frigid Typic Haploxeralfs
Trojan	Fine-loamy, mixed, frigid Ultic Argixerolls
Vipont	Loamy-skeletal, mixed, frigid Pachic Argixerolls
Washoe	Loamy-skeletal, mixed, mesic Xerollic Haplargids
Weitchpec	Loamy-skeletal, serpentinitic, mesic Typic Xerochrepts
Wintoner	Fine-loamy, mixed, frigid Ultic Haploxeralfs
Woodseye	Loamy-skeletal, mixed, frigid Lithic Xerumbrepts
Worley	Fine, montmorillonitic, mesic Mollic Palexeralfs
Zeibright	Loamy-skeletal, mixed, mesic Entic Xerumbrepts
	Haplic Durixeralfs,
	Lithic Haploxeralfs,
	Lithic Mollic Haploxeralfs,
	Lithic Ruptic-Xerochreptic Haploxeralfs,
	Mollic Haploxeralfs,
	Ultic Haploxeralfs,
	Lithic Xerorthents (cold)
	Lithic Xerorthents (granitic),
	Lithic Xerorthents (ultramafic),
	Entic Xerumbrepts,
	Lithic Xerumbrepts,
	Lithic Argixerolls,
	Lithic Cryoborolls,
	Lithic Haploxerolls,
	Typic Haploxerolls,
	Mollic Palexeralfs.

TABLE 4. - Classification by Taxonomic Category

Order	Suborder	Great Group	Subgroup	Family	Soil Name
ALFISOLS	Xeralfs	Haploxeralfs	Mollic Haploxeralfs	clayey-skeletal, serpentinitic, mesic	Dubakella family
				fine-loamy, mixed, frigid	Neuske family
				fine-loamy, mixed, mesic	Morical family
				loamy-skeletal, mixed, frigid	Etchen family
			Typic Haploxeralfs	loamy-skeletal, serpentinitic, frigid	Toadlake family
				loamy-skeletal, serpentinitic, mesic	Guemes family
				fine-loamy, mixed, frigid	Wintoner family
				fine-loamy, mixed, mesic	Holland family
			Ultic Haploxeralfs	loamy-skeletal, mixed, frigid	Inville family
				loamy-skeletal, mixed, mesic	Skalan family
		Palexeralfs	Mollic Palexeralfs	clayey-skeletal, serpentinitic, frigid	Tangle family
				fine, montmorillonitic, mesic	Worley family
			Ultic Palexeralfs	fine, kaolinitic, mesic	Coboc family
ARIDISOLS	Argids	Haplargids	Xerollic Haplargids	loamy-skeletal, mixed, mesic	Washoe family
ENTISOLS	Psamments	Xeropsamments	Dystric Xeropsamments	ashy, frigid,	Oosen family

Order	Suborder	Great Group	Subgroup	Family	Soil Name
ENTISOLS (continued)					
				ashy, mesic	Deetz family
		Xerorthents	Typic Cryorthents	loamy-skeletal, serpentinitic	Deadfall family
			Dystic Xerorthents	ashy-skeletal, frigid	Avis family
				cindery, frigid	Stonewell family
				cindery over medial-skeletal, frigid	Redcap family
INCEPTISOLS					
	Ochrepts	Cryochrepts	Dystic Cryochrepts	loamy-skeletal mixed	Endlich family
		Xerochrepts	Andic Xerochrepts	loamy-skeletal, mixed, frigid	Belzar family
			Dystic Xerochrepts	coarse-loamy, mixed, frigid	Rogue family
				coarse-loamy, mixed, mesic	Gilligan family
				loamy, mixed, mesic, shallow	Chawanakee family
				loamy-skeletal, mixed, frigid	Jayar family
				loamy-skeletal, mixed, mesic	Clallam family
			Typic Xerochrepts	loamy-skeletal, mixed, frigid	Merkel family
				loamy-skeletal, mixed, mesic	Olete family
				loamy-skeletal, serpentinitic, frigid	Parks family

Order	Suborder	Great Group	Subgroup	Family	Soil Name
INCEPTISOLS (continued)					
				loamy-skeletal, serpentinitic, mesic	Weitchpec family
		Cryumbrepts	Lithic Cryumbrepts	loamy-skeletal, mixed	Teewinot family
			Typic Cryumbrepts	loamy-skeletal, mixed	Buell family
		Xerumbrepts	Andic Xerumbrepts	medial-skeletal, frigid	Sheld family
			Entic Xerumbrepts	loamy-skeletal, mixed, mesic	Zeibright family
			Lithic Xerumbrepts	loamy-skeletal, mixed, frigid	Woodseye family
			Pachic Xerumbrepts	loamy-skeletal, mixed, frigid	Tallac family
			Typic Xerumbrepts	coarse-loamy, mixed, frigid	Gerle family
				coarse-loamy, mixed, mesic	Ovall family
				loamy-skeletal, mixed, frigid	Nanny family
MOLLISOLS	Xerolls	Argixerolls	Aridic Argixerolls	clayey-skeletal, montmorillonitic, mesic	Ruclick family
				fine-loamy, mixed, mesic	Cowiche family
			Lithic Argixerolls	clayey, montmoril- lonitic, mesic	Deven family
				clayey-skeletal, serpentinitic, mesic	Beaughton family
			Pachic Argixerolls	clayey-skeletal, serpentinitic, mesic	Kang family

Order	Suborder	Great Group	Subgroup	Family	Soil Name
MOLLISOLS (continued)					
				fine-loamy, mixed, frigid	Hades family
				loamy-skeletal, mixed, frigid	Vipont family
			Pachic Ultic Argixerolls	fine-loamy, mixed, frigid	DeMasters family
				loamy-skeletal, mixed, frigid	Smarts family
			Ultic Argixerolls	fine-loamy, mixed, frigid	Trojan family
				fine, mixed, mesic	Helvetia family
				loamy-skeletal, mixed, mesic	Bluesprin family
		Haplaguolls	Cumulic Haplaguolls	fine-silty, mixed, frigid	Quam family
		Haploxerolls	Ultic Haploxerolls	coarse-loamy, mixed, frigid	Kilmerque family
ULTISOLS	Humults	Haplohumults	Xeric Haplohumults	clayey, kaoli- nitic, mesic	Prather family
				clayey, oxidic mesic	Aiken family
		Haploxerults	Typic Haploxerults	fine-loamy, mixed, mesic	Goldridge family

Taxonomic Unit Descriptions and Their Morphology

In this section, each soil recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified. A pedon, a small three-dimensional area of soil, that is typical of the soil in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual (10). Unless otherwise stated, colors in the descriptions are for dry soil. Following the pedon

description is the range of important characteristics of the soil, and a brief statement concerning use and vegetation.

The map units of each soil are listed in Table 2 and are described in the section "Detailed Soil Map Units."

Table 5 is the Map Unit Legend which lists the area of each soil and map unit component, and identifies its proportionate extent of the survey area.

AIKEN FAMILY

The Aiken family consists of deep or very deep, well drained residual soils formed from weathered alluvium or serpentinized metamorphic rocks. These soils occur on broad ridges, mountain sideslopes and high terraces. Slopes range from 2 to 50 percent. The mean annual precipitation is 50 to 100 inches and the mean annual temperature is about 52° F. Elevations are 600 to 5,200 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Clayey, oxidic, mesic Xeric Haplohumults.

Typical Pedon: Aiken family gravelly loam - on a 30 percent convex southeast-facing slope at 2,100 feet elevation, under a 70 percent stand of Douglas-fir, sugar pine and ponderosa pine. (Colors are for dry soil unless otherwise stated).

O-1 to 0 inches; weakly matted conifer needles.

A1-0 to 2 inches; reddish brown (5YR 4/4) gravelly loam, dark reddish brown (2.5YR 3/4) moist; weak medium granular structure; slightly hard, friable, slightly sticky and nonplastic; few roots; slightly acid (pH 6.1); clear smooth boundary.

A2-2 to 9 inches; reddish brown (2.5YR 4/4) gravelly loam, dark reddish brown (2.5YR 3/4) moist; moderate very fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common roots; continuous thin clay films on ped faces; slightly acid (pH 6.1); gradual smooth boundary.

Bt1-9 to 20 inches; reddish brown (2.5YR 4/4) gravelly clay loam, dark reddish brown (2.5YR 3/4) moist; moderately very fine subangular blocky structure; hard, friable, sticky and plastic; common roots; continuous thin clay films on ped faces; medium acid (pH 5.9); gradual smooth boundary.

Bt2-20 to 32 inches; reddish brown (2.5YR 5/4) gravelly clay loam, reddish brown (2.5YR 4/4) moist; moderate very fine angular blocky structure; hard, friable, very sticky and plastic; few roots; continuous thin clay films on ped faces; medium acid (pH 5.8); diffuse boundary.

Bt3-32 to 49 inches; reddish brown (2.5YR 5/4) gravelly clay loam, reddish brown (2.5YR 4/4) moist; weak very fine angular blocky structure; hard, friable,

sticky and plastic; very few roots; continuous thin clay films on ped faces; medium acid (pH 5.9); gradual smooth boundary.

C1-49 to 59 inches; yellowish red (5YR 5/6) gravelly silt loam, yellowish red (5YR 4/6) moist; weak coarse subangular blocky structure; hard, friable, sticky and slightly plastic; very few roots; common thin clay films on ped faces; medium acid (pH 5.9); gradual wavy boundary.

C2-59 to 67 inches; reddish yellow (7.5YR 6/6) silt loam, yellowish red (5YR 5/6) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; very few roots; slightly acid (pH 6.2); abrupt irregular boundary.

R-67+ inches; serpentinized metamorphic bedrock.

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; NW 1/4 NE 1/4 Section 15, T. 46 N., R. 12 W.

Range in Characteristics: The soil is 40 to greater than 60 inches to bedrock. The mean annual soil temperature is 47 to 59° F.; the mean January soil temperature is 35 to 46° F.; the mean July soil temperature is 55 to 75° F. The soil temperature exceeds 41° F. from February 20 to December 1, and is greater than 47° F. from March 20 to November 15. The soil between the depth of 8 to 21 inches is dry in all parts from July 15 to October 20, and moist in some or all parts the rest of the year. The soil is medium to slightly acid.

The A horizon is reddish brown, yellowish red, or red (2.5YR 4/4, 4/6, 5/4, 5/6; 5YR 4/3, 4/4, 5/4, 5/6). Moist colors are dark reddish brown, yellowish red, dark red (2.5YR 3/4, 3/4, 4/4, 4/6). It is gravelly clay loam, loam, or sandy loam, with 15 to 35 percent rock fragments. There are many fine and medium shot present in the A horizon. Reaction is slightly acid to medium acid.

The Bt horizon is reddish brown, red or yellowish red (2.5YR 4/4, 4/6, 5/4, 5/6, 5/8; 5YR 4/6, 5/6). Moist colors are dark reddish brown, dark red, reddish brown, red, or yellowish red (2.5YR 3/4, 3/6, 4/4, 4/6; 5YR 3/3, 3/4, 4/6, 5/6). It is clay loam, gravelly clay loam, clay or gravelly clay with 0 to 35 percent rock fragments. Fine black stains and fine and medium shot may be present in

the B horizon. The family control section has a weighted average of greater than 35 percent clay.

The C horizon is reddish yellow (5YR 6/6, 6/8; 7.5YR 6/6, 6/8, 7/6). Moist colors are red, yellowish red, or strong brown (2.5YR 5/8; 5YR 4/6, 4/8, 5/6; 7.5YR 5/8). It is loam, silt loam, or clay loam. Few shot may be present in the C horizon. Reaction is medium acid

to slightly acid.

Use and Vegetation: Used for timber production, wildlife habitat, and watershed. The native vegetation includes Douglas-fir, sugar pine, ponderosa pine, incense cedar, tanoak, madrone, black oak, deerbrush, bracken fern and poison oak.

AVIS FAMILY

The Avis family consists of very deep, well to somewhat excessively drained soils formed in volcanic ash overlying andesitic and basaltic flow rocks. These soils occur on mountain sideslopes, flats and lava flow ridges. Slopes are 2 to 50 percent. The mean annual precipitation is about 20 to 40 inches and the mean annual temperature is about 42° F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Ashy-skeletal, frigid, Dystric Xerorthents.

Typical Pedon: Avis family sand - on an 8 percent north-facing slope at 5,400 feet elevation, under ponderosa pine, white fir and brush. (Colors are for dry soil unless otherwise noted.)

O-1/2 to 0 inches; loose conifer needles, twigs, and cones.

A1-0 to 1 inches; very dark grayish brown (10YR 3/2) sand, very dark brown (10YR 2/2) moist; single grained; loose, loose, nonsticky and nonplastic; few very fine and fine roots; common fine interstitial pores; 8 percent pebbles and 1 percent cobbles; slightly acid (pH 6.3); clear smooth boundary.

A2-1 to 6 inches; grayish brown (10YR 5/2) sand, very dark grayish brown (10YR 3/2) moist; single grained; loose, loose, nonsticky and nonplastic; common fine and very fine, and few medium roots; common very fine and few fine interstitial pores; 10 percent pebbles; neutral (pH 6.9); gradual wavy boundary.

C1-6 to 19 inches; yellowish brown (10YR 5/4) coarse sand, dark brown (10YR 4/3) moist; single grained; loose, loose, nonsticky and nonplastic; common medium and few coarse and fine roots; common very fine interstitial pores; 18 percent pebbles and 1 percent cobbles; neutral (pH 7.0); clear wavy boundary.

C2-19 to 61+ inches; yellowish brown (10YR 5/4) very cobbly coarse sand, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few coarse and medium roots; common very fine

interstitial pores; 25 percent pebbles and 15 percent cobbles; neutral (pH 7.2)

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; 7 miles north of Mount Shasta, 2 1/2 miles east of Military Pass Road, 20 feet west of logging road; SW 1/4 SE 1/4 Section 3, T. 42 N., R. 3 W.

Range in Characteristics: Depth to a lithic contact is greater than 60 inches. The mean annual soil temperature is 39 to 46° F.; mean January soil temperature is 32 to 36° F.; and mean July soil temperature is 47 to 57° F. The soil temperature exceeds 41° F. from April 10 to November 20 and exceeds 47° F. from May 15 to October 25. The soil between a depth of 16 and 56 inches is dry in all parts from August 1 to October 15 in most years and is moist in some or all parts the rest of the year.

The A horizon is very dark grayish brown, dark brown, grayish brown, brown, yellowish brown, or pale brown (10YR 3/2, 4/3, 5/2, 5/3, 5/4, 6/3). Moist colors are very dark brown, very dark grayish brown, or dark brown (10YR 2/2, 3/2, 3/3). It is sand, fine sand, loamy sand, loamy fine sand, or gravelly loamy sand with 4 to 10 percent clay, and 2 to 20 percent gravel and 0 to 5 percent cobbles and stones. Reaction is slightly acid to neutral.

The C horizon is yellowish brown, light brownish gray, pale brown, or light yellowish brown (10YR 5/3, 5/4, 6/2, 6/4). Moist colors are dark brown, dark yellowish brown, dark grayish brown or brown (10YR 3/3, 3/4, 4/2, 4/3). It is very cobbly or extremely cobbly loamy sand, fine loamy sand, gravelly coarse sand, or very cobbly coarse sand with 4 to 9 percent clay and 20 to 80 percent cobbles, gravel, and stones. The weighted average of rock fragments in the 10 to 40 inch control section is greater than 35 percent. Reaction is slightly acid to mildly alkaline.

Use and Vegetation: Used primarily for timber production and wildlife habitat. Native vegetation includes ponderosa pine, white fir, few lodgepole pine and red fir, bitterbrush, blue elderberry, snowbrush, greenleaf manzanita, rabbitbrush, squaw carpet, bottlebrush squirreltail, bromes and fescues.

BEAUGHTON FAMILY

The Beaughton family consists of shallow, well drained soils that formed in material weathered from serpentinized ultramafic rock. These soils are on mountain ridges and sideslopes. Slopes range from 30 to 90 percent. The mean annual precipitation is 20 to 40 inches and the mean annual temperature is about 50° F. Elevations are 2,000 to 4,800 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Clayey-skeletal, serpentinitic, mesic Lithic Argixerolls.

Typical Pedon: Beaughton family loam - on a 20 percent northeast-facing slope at 4,060 feet elevation under Jeffrey pine, rabbitbrush, cheatgrass and Idaho fescue cover. (Colors are for dry soil unless otherwise stated).

A1-0 to 1 inch; dark grayish brown (10YR 4/2) extremely gravelly loam, very dark gray (10YR 3/1) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine roots; few fine interstitial pores; 70 percent pebbles; slightly acid (pH 6.5); abrupt smooth boundary.

Bt1-1 to 4 inches; grayish brown (10YR 5/2) gravelly clay loam, very dark grayish brown (10YR 3/2) moist; weak very fine and fine subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few thin clay films in pores and on ped faces; common very fine roots; common very fine and few fine tubular pores; 20 percent pebbles; neutral (pH 7.0); clear smooth boundary.

Bt2-4 to 12 inches; grayish brown (2.5Y 5/2) very gravelly clay loam, very dark grayish brown (2.5Y 3/2) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; common thin and moderately thick clay bridging and clay films on ped faces and in pores; few very fine, fine, and medium roots; common very fine and fine tubular pores; 45 percent pebbles and 2 percent cobbles; neutral (pH 7.0); clear wavy boundary.

R-12 inches; hard fractured serpentinitic rock.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; about 3.5 miles east northeast of Callahan, California, 5 miles west of Kangaroo Lake, 3/4 miles south of the Polar Bear Mine; SW 1/4 SE 1/4 Section 12, T. 40 N., R. 8 W.

Range in Characteristics: Depth to a lithic contact is less than 20 inches. Mean annual soil temperature is 47 to 57° F.; mean January soil temperature is 36 to 41° F.; mean July soil temperature is 57 to 71° F. The soil temperature exceeds 41° F. from February 20 to December 5 and exceeds 47° F. from March 20 to November 15. The soil between a depth of 7 inches and the lithic contact is dry in all parts from July 15 to October 20 in most years and is moist in some or all parts the rest of the year. The mollic epipedon is 7 to 19 inches thick. The base saturation is greater than 75 percent throughout the soil.

The A horizon is dark grayish brown, brown or yellowish brown (10YR 4/2, 4/3, 5/3, 5/4). Moist colors are very dark brown, very dark gray, very dark grayish brown, or dark brown (10YR 2/2, 3/1, 3/2, 3/3). It is gravelly sandy loam or gravelly to extremely gravelly loam with 12 to 16 percent clay and 20 to 70 percent gravels and cobbles. Reaction is slightly acid to neutral.

The Bt horizon is grayish brown or brown (2.5Y 5/2; 10YR 4/3, 5/2, 5/3). Moist colors are very dark grayish brown, dark brown, or dark grayish brown (2.5Y 3/2; 10YR 3/2, 3/3, 4/2). It is gravelly to extremely gravelly clay loam or extremely gravelly clay with 22 to 45 percent clay and 20 to 65 percent gravel and cobbles. The weighted average of the family control section is greater than 35 percent clay and greater than 35 percent gravel and cobbles. Reaction is neutral to mildly alkaline.

Use and Vegetation: Used mainly for watershed, wildlife, range and some timber production. Native vegetation consists of Jeffrey pine, ponderosa pine, incense cedar, Douglas-fir, some digger pine, white oak, rabbitbrush, buckbrush, serviceberry, cheatgrass, Idaho fescue, blue wildrye and bottlebrush squirreltail.

BELZAR FAMILY

The Belzar family consists of very deep, well to somewhat excessively drained soils that formed in materials weathered from extrusive igneous rocks (cinders, basalt and/or andesite) overlain by young pumice and ash deposits. These soils are on mountain sideslopes, ridges and benches. Slopes range from 2 to 50 percent. The mean annual precipitation is 20 to 40 inches and mean annual temperature is about 40°F. Elevations are 5,000 to 7,000 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid Andic Xerochrepts.

Typical Pedon: Belzar family gravelly sandy loam - on a 2 percent sloping volcanic upland flat at 5,000 feet elevation, under Jeffrey pine, white fir, snowbrush, greenleaf manzanita, squaw carpet, rabbitbrush and perennial grasses. (Colors are for dry soil unless otherwise stated).

A1-0 to 3 inches; very dark grayish brown (10YR 3/2) gravelly coarse sandy loam, black (10YR 2/1) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine interstitial pores; 25 percent pumice pebbles; slightly acid (pH 6.3); abrupt wavy boundary.

A2-3 to 7 inches; brown (7.5YR 5/4) gravelly coarse sandy loam, dark reddish brown (7.5YR 3/4) moist; weak fine and medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine, and few medium roots; few very fine tubular and interstitial pores; 30 percent pumice pebbles; medium acid (pH 6.0); clear wavy boundary.

2Ab-7 to 13 inches; brown (7.5YR 5/4) gravelly sandy loam, dark brown (7.5YR 3/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; few very fine tubular and common interstitial pores; 20 percent pebbles; medium acid (pH 6.0); gradual smooth boundary.

2Bt1b-13 to 21 inches; brown (7.5YR 5/4) very gravelly sandy loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine, medium, and coarse roots; common very fine interstitial and few very fine tubular pores; 30 percent pebbles, 5 percent cobbles, and 4 percent stones; medium acid (pH 6.0); clear wavy boundary.

2Bt2b-21 to 35 inches; brown (7.5YR 5/4) very cobbly sandy loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and nonplastic; very few thin clay films in pores; few very fine, fine, and medium roots; few very fine and fine tubular, and common fine interstitial pores; 20 percent pebbles, 30 percent cobbles, 10 percent stones; slightly acid (pH 6.3); gradual wavy boundary.

2Bt3b-35 to 54 inches; brown (7.5YR 5/4) very gravelly sandy loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few thin clay films in pores and on ped faces and bridging; few very fine, fine, medium and coarse roots; few very fine and fine tubular and common fine interstitial pores; 60 percent pebbles, 15 percent cobbles, and 15 percent stones; slightly acid (pH 6.3); gradual wavy boundary.

2Cb-54 to 62 inches; brown (7.5YR 5/4) extremely gravelly sandy loam, dark brown (7.5YR 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common thin bridging; few very fine and fine roots; common very fine interstitial and few fine tubular pores, 70 percent pebbles; slightly acid (pH 6.3).

R-62+ inches; Fractured, hard andistic rock.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; 4 miles west-southwest of Garner Mountain, 4.5 miles north of Stevens Butte on Tennant Road; SE 1/4 SW 1/4 Section 9, T. 43 N., R. 1 E.

Range in Characteristics: Depth to a lithic contact is greater than 60 inches. Mean annual soil temperature is 38 to 46°F; mean January soil temperature is 30 to 35°F; mean July soil temperature is 43 to 55°F. The soil temperature exceeds 41°F. from April 25 to November 20 and exceeds 47°F. from June 1 to October 20. The soil between a depth of 10 to 30 inches is dry throughout from August 1 to October 15 in most years and is moist in some or all parts the rest of the year. Base saturation is greater than 60 percent in some part between the depths of 10 and 30 inches. When mollic colors occur the epipedon is not thick enough to qualify as a mollic epipedon.

The A horizon is very dark grayish brown, dark grayish brown, gray, grayish brown, brown or yellowish brown (10YR 3/2, 4/2, 5/1, 5/2, 5/3; 7.5YR 5/4). Moist colors

are black, very dark brown, very dark grayish brown, dark brown or dark reddish brown (10YR 2/1, 2/2, 3/2, 3/3; 7.5YR 3/4). It is gravelly to extremely gravelly coarse sand, gravelly to extremely gravelly loamy coarse sand, or gravelly to very gravelly coarse sandy loam with 0.5 to 8 percent clay and 15 to 90 percent pumice gravel. Reaction is strongly acid to slightly acid.

In some pedons there is a C horizon composed of additional layers of ash and pumice. It is very dark gray, dark grayish brown, dark yellowish brown, yellowish brown, light gray, or very pale brown (10YR 3/1, 4/2, 4/6, 5/4, 7/2, 7/3). Moist colors are black, very dark gray, very dark grayish brown, dark brown, dark yellowish brown, grayish brown, brown, light grayish brown, or pale brown (10YR 2/1, 3/1, 3/2, 4/3, 4/6, 5/2, 5/3, 6/2, 6/3), or a mixture of the above. Texture, pumice gravel and reaction are similar to the A horizon.

The 2Ab horizon is yellowish brown, light yellowish brown, brown, and light brown (10YR 5/4, 6/4; 7.5YR 5/4, 6/4). Moist colors are dark brown or dark yellowish brown (10YR 3/3, 4/4; 7.5YR 3/4, 4/4). Texture is gravelly and very gravelly sandy loam, very gravelly and extremely cobbly fine sandy loam, or very gravelly loam with 5 to 18 percent clay and 15 to 75 percent gravel,

cobbles and few stones. Reaction is medium acid to neutral.

The 2Btb horizon is pale brown, light yellowish brown or brown (10YR 6/3, 6/4; 7.5YR 5/4). Moist colors are dark brown, dark yellowish brown, or brown (10YR 3/3, 3/4, 4/3, 4/4; 7.5YR 4/4). It is very cobbly loam, gravelly to extremely gravelly sandy loam, extremely gravelly fine sandy loam, or extremely cobbly fine sandy loam with 8 to 20 percent clay and 35 to 90 percent gravel, cobbles, and stones. Reaction is slightly acid to neutral.

The 2Cb horizon, where present, is similar in color to the 2 Bt horizon, but is one to two chromas or values lower than the horizons above. It is very to extremely gravelly sandy loam, fine sandy loam, or loam with 8 to 20 percent clay and 50 to 90 percent gravel, cobbles, and few stones. Reaction is slightly acid to neutral.

Use and Vegetation: Used mainly for timber production and wildlife habitat. Native vegetation is lodgepole pine, ponderosa pine, white fir, few red fir, big sagebrush, snowbrush, greenleaf manzanita, rabbitbrush, bitterbrush, squaw carpet and perennial grasses, usually bottlebrush squirreltail, stipas, and a few wheatgrasses.

BLUESPRIN FAMILY

The Bluesprin family consists of moderately deep to deep, well drained soils formed in residuum or colluvium from metamorphic rocks. These soils occur on mountain sideslopes. Slopes range from 30 to 50 percent. The mean annual precipitation is 30 to 50 inches and the mean annual temperature is 52° F. Elevations range from 2,000 to 4,800 feet. The climate is mediterranean with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, mixed, mesic Ultic Argixerolls.

Typical Pedon: Bluesprin family very gravelly loam - on a 45 percent southwest-facing slope at 3,050 feet elevation, under a cover of Oregon white oak and California fescue. (Colors are for dry soil unless otherwise noted).

O-2 to 0 inches; loose and matted oak leaves and grass litter.

A1-0 to 1 inch; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, slightly sticky and nonplastic; common very fine roots; 40 percent pebbles and 5 percent cobbles; neutral (pH 6.8); abrupt smooth boundary.

A2-1 to 6 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (7.5YR 3/2) moist; moderate very fine angular blocky structure; slightly hard, slightly sticky and slightly plastic; common very fine and fine roots; 40 percent pebbles and 5 percent cobbles; neutral (pH 7.0); clear smooth boundary.

AB-6 to 11 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 3/3) moist, moderate fine and medium subangular blocky structure; hard, slightly sticky and slightly plastic; few very fine and fine roots; 50 percent pebbles and 5 percent cobbles; neutral (pH 7.0); gradual smooth boundary.

Bt1-11 to 23 inches; brownish yellow (10YR 6/6) very gravelly clay loam, dark brown (10YR 4/3) moist;

weak fine and medium subangular blocky structure; hard, sticky and plastic; many thin clay films in pores, and few moderately thick clay films on ped faces; very few very fine and fine roots; 60 percent pebbles and 10 percent cobbles; neutral (pH 6.8); abrupt irregular boundary.

R-23+ inches; highly fractured hard schist bedrock.

Type Location: Salmon River District, Klamath National Forest; Siskiyou County, California; about 3/4 mile southeast of the confluence of St. Claire Creek and the South Fork of the Salmon River; NE 1/4 NW 1/4 NE 1/4 Section 36, T. 38 N., R. 12 W., Mount Diablo Base Meridian.

Range in Characteristics: Bluesprin soils are 20 to 60 inches deep to highly fractured metamorphic bedrock. The mean annual soil temperature is 47 to 59° F.; the mean January soil temperature is 33 to 42° F.; the mean July soil temperature is 62 to 73° F. The soil temperature at a depth of 20 inches exceeds 41° F. from March 31 through mid-December and exceeds 47° F. from mid-March through November 30. The soil is dry between the depths of 4 and 13 inches from mid-July until mid-October in most years and is moist in some or all parts the remainder of the year.

The A horizon is brown or yellowish brown (10YR 5/3, 5/4) dry, and very dark grayish brown or dark brown (7.5YR 3/2; 10YR 3/2, 3/3) moist. It is a very gravelly loam. Rock fragments are 35 to 45 percent by volume. Reaction is neutral to medium acid.

The Bt horizon is brownish yellow (10YR 6/6) dry, and brown (10YR 4/3) moist. It is a very gravelly clay loam. Rock fragments are 40 to 60 percent by volume. Reaction is neutral to slightly acid.

Use and Vegetation: Used mainly for woodland, wildlife and watershed. Native vegetation consists of Oregon white oak forest with California fescue and other perennial grasses. Few ponderosa pine and canyon live oak.

BUELL FAMILY

The Buell family consists very deep, well drained soils formed from metamorphic colluvium and glacial till. These soils occur on glaciated sideslopes and valleys. Slopes range from 2 to 50 percent. The mean annual precipitation is 60 to 90 inches and the mean annual temperature is about 38° F. Elevations are 6,200 to 8,000 feet. The climate is mediterranean, with warm dry summers and cold snowy winters.

Taxonomic Class: Loamy-skeletal, mixed Typic Cryum-brepts.

Typical Pedon: Buell family gravelly loam - on a 29 percent southeast-facing slope at 7,700 feet elevation, under a cover of whitebark pine, mountain hemlock, and an assortment of grasses and forbs. (Colors are for dry soil unless otherwise stated.)

O-1/2 to 0 inches; loose conifer needles and herbaceous litter.

A1-0 to 3 inches; brown (10YR 4/3) gravelly loam, dark brown (10YR 3/3) moist; massive; soft, very friable, slightly sticky and nonplastic; common very fine roots; 20 percent pebbles, 1 percent cobbles and 1 percent stones; very strongly acid (pH 5.0); clear wavy boundary.

A2-3 to 7 inches; dark yellowish brown (10YR 4/4) gravelly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; many roots; 20 percent pebbles, 1 percent cobbles and 1 percent stones; very strongly acid (pH 5.0); clear smooth boundary.

Bw-7 to 16 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (7.5YR 4/4) moist; massive; soft, very friable, slightly sticky and nonplastic; common roots; 30 percent pebbles, 5 percent cobbles and 10 percent stones; very strongly acid (pH 5.0); gradual smooth boundary.

C-16 to 60+ inches; light yellowish brown (10YR 6/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, slightly sticky and nonplastic; few roots; 30 percent pebbles, 10 percent cobbles and 10 percent stones; very strongly acid (pH 5.0).

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; about 1 mile east-northeast of Boulder Peak; Section 14, T. 43 N., R. 11 W.

Range in Characteristics: Depth to a lithic contact is greater than 60 inches deep. The mean annual soil temperature is 32 to 46° F.; the mean summer soil temperature is 40 to 47° F. where an O horizon is present, and 50 to 55° F. where no O horizon is present. The soil temperature exceeds 41° F. from May 15 to November 10, and is greater than 47° F. from July 1 to October 10. The soil between the depths of 8 and 23 inches is dry in all parts from August 10 to October 10. Base saturation is assumed to be less than 50 percent throughout the soil.

The A horizon is brown, dark grayish brown, dark yellowish brown or grayish brown (7.5YR 5/2, 5/4; 10YR 4/2, 4/3, 4/4, 5/2, 5/3). Moist colors are dark brown, or very dark brown, or very dark grayish brown (7.5YR 3/2; 10YR 3/2, 3/3). It is gravelly or very gravelly loam, with 20 to 40 percent gravel and 1 to 10 percent cobbles and stones.

The Bw horizon is brown, strong brown, or yellowish brown (7.5YR 5/4, 5/6; 10YR 5/3, 5/4, 5/6). Moist colors are dark brown, strong brown, and dark yellowish brown (7.5YR 4/4, 4/6; 10YR 4/3, 4/4, 4/6). It is very gravelly or extremely gravelly loam, with 30 to 60 percent pebbles and 5 to 20 percent cobbles and stones.

The C horizon is pinkish gray, light brown, pale brown, or light yellowish brown (7.5YR 6/2, 6/4; 10YR 6/3, 6/4). Moist colors are dark brown or dark yellowish brown (7.5YR 4/2, 4/4; 10YR 4/3, 4/4). It is very gravelly loam or very gravelly sandy loam, with 35 to 60 percent gravel and 10 to 20 percent cobbles and stones.

Use and Vegetation: Used for watershed, wildlife, timber production and recreation. The native vegetation is whitebark pine, mountain hemlock, brewer spruce, red fir, foxtail pine, buckwheat, aster, penstemon, lupine, knotweed, yarrow, monardella, bottlebrush squirreltail, blue wild rye, fescue, brome and other meadow forbs and perennial grasses.

CHAWANAKEE FAMILY

The Chawanakee family consists of shallow, somewhat excessively drained residual soils formed from granitic rocks. These soils occur on mountain sideslopes and narrow ridges. Slopes are 30 to 90 percent. The mean annual precipitation is 40 to 70 inches and the mean annual temperature is about 51° F. Elevations are 1,500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy, mixed, mesic, shallow Dystric Xerochrepts.

Typical Pedon: Chawanakee family loam - on a 30 percent southwest-facing slope at 4,400 feet elevation, under a mixed conifer and oak cover. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches; matted conifer needles and twigs.

A-0 to 1 inch; brown (7.5YR 4/2) loam, dark reddish brown (5YR 3/3) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; common fine, medium, and few coarse roots; few, fine interstitial pores; 10 percent pebbles; strongly acid (pH 5.5); clear smooth boundary.

Bw1-1 to 4 inches; strong brown (7.5YR 4/6) sandy loam, dark reddish brown (5YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; very few very thin clay films in pores and as bridges; common very fine, fine and few coarse roots; common very fine and fine interstitial pores; 30 percent pebbles; medium acid (pH 6.0); gradual smooth boundary.

Bw2-4 to 10 inches; brown (7.5YR 4/4) gravelly sandy loam, dark reddish brown (5YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky, nonplastic; few very thin clay films as bridges; many very fine and fine, and few medium roots; common very fine and fine interstitial pores; 30 percent pebbles; slightly acid (pH 6.5); gradual smooth boundary.

BC-10 to 15 inches; brown (7.5YR 4/4) gravelly sandy loam, brown (7.5YR 4/4) moist; massive; loose, loose, nonsticky and nonplastic; few very fine and fine roots; common very fine interstitial pores; 30 percent pebbles; slightly acid (pH 6.5); gradual wavy boundary.

Cr-15+ inches; soft, weathered bedrock.

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; SW 1/4 SE 1/4 Section 34, T. 48 N., R. 8 W.

Range in Characteristics: The soil is 10 to 19 inches deep to soft weathered bedrock. The mean annual soil temperature is 47 to 59° F.; the mean January temperature is 35 to 45° F.; the mean July temperature is 55 to 73° F. The soil temperature exceeds 41° F. from February 20 to December 1, and is greater than 47° F. from March 20 to November 15. The soil between the depths of 11 and 19 inches is dry in all parts from July 15 to October 20, and moist in some or all parts the rest of the year. The soil is slightly acid to neutral.

The A horizon is brown, dark grayish brown, grayish brown, light brownish gray, or pale brown (7.5YR 4/2, 4/4, 5/2, 5/4; 10YR 4/2, 5/2, 5/3, 6/2, 6/3; 2.5Y 4/2, 5/2, 6/2). Moist colors are dark reddish brown, dark brown, very dark grayish brown, or dark yellowish brown (5YR 3/3; 7.5YR 3/2, 3/3; 10YR 3/2, 3/3; 2.5Y 3/2). It is loam, sandy loam, or loamy sand, and may be gravelly. Clay content is 8 to 12 percent. There are 10 to 30 percent gravel. Reaction is medium to strongly acid.

The Bw horizon is brown, strong brown, yellowish brown, pale brown, light yellowish brown, light brownish gray, light gray, or pale yellow (7.5YR 4/4, 4/6, 5/4, 5/6; 10YR 5/3, 5/4, 6/3, 6/4; 2.5Y 6/2, 6/4, 7/2, 7/4). Moist colors are dark reddish brown, reddish brown, brown, dark brown, dark yellowish brown, dark grayish brown, or grayish brown (5YR 3/3, 3/4, 4/3, 4/4; 7.5YR 3/2, 3/4, 4/2, 4/4; 10YR 3/3, 3/4, 4/2, 4/3, 4/4; 2.5Y 4/2, 5/2). It is a sandy loam or gravelly sandy loam with a 1 to 2 percent more clay content than the A horizon. There are 10 to 35 percent gravels. Reaction is slightly to medium acid.

The Cr horizon is soft, highly weathered bedrock.

Use and Vegetation: Used primarily for timber production, watershed, range, and wildlife habitat. The native vegetation includes ponderosa pine, Douglas-fir, incense cedar, sugar pine, black oak, canyon live oak, deerbrush, squaw carpet, whiteleaf manzanita and bluegrass.

CINDER LANDS

Cinder lands consist of loose cinders and other scoriaceous magmatic ejecta. Slopes are 30 to 70 percent. Water-holding capacity is very low and trafficability is

poor. Cinder lands are used for wildlife habitat and watershed. A few areas are used as a source of cinders for road surfaces.

CLALLAM FAMILY, DEEP

The Clallam family deep, consists of deep, well drained soils formed in residuum and colluvium from metamorphic rocks or glacial till. These soils occur on mountain sideslopes, colluvial footslopes and ground moraines. Slopes range from 2 to 90 percent. The mean annual precipitation is 30 to 90 inches and the mean annual temperature is 52°F. Elevations range from 500 to 5,200 feet. The climate is mediterranean, with warm dry summers, and cool moist winters.

Taxonomic Class: Loamy-skeletal, mixed, mesic Dystric Xerochrepts.

Typical Pedon: Clallam family, deep, very gravelly loam - on a 75 percent northeast-facing slope at 3,000 feet elevation, under a mixed conifer stand. (Colors are for dry soil unless otherwise noted.)

O-1 to 0 inches; loose and matted conifer needles and broad leaves, more decomposed with increasing depth.

A1-0 to 2 inches; grayish brown (10YR 5/2) very gravelly loam, very dark brown (10YR 2/2) moist; strong very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine and fine tubular and interstitial pores; 90 percent pebbles; slightly acid (pH 6.4); clear smooth boundary.

A2-2 to 7 inches; pale brown (10YR 6/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate very fine subangular blocky structure; slightly hard, friable; common very fine and few fine roots; common very fine and fine tubular and interstitial pores; slightly sticky and nonplastic; 70 percent pebbles; slightly acid (pH 6.1); gradual smooth boundary.

Bw1-7 to 13 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and few fine roots; common very fine and fine tubular and interstitial pores; 65 percent pebbles; medium acid (pH 5.7); gradual smooth boundary.

Bw2-13 to 30 inches; very pale brown (10YR 7/4) very gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few very fine, common fine and medium roots; many very fine tubular and interstitial pores; 45 percent pebbles; medium acid (pH 5.8); gradual smooth boundary.

C-30 to 42 inches; very pale brown (10YR 7/4) very gravelly clay loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, sticky and plastic; few very fine and fine roots; common very fine interstitial pores; 65 percent pebbles; medium acid (pH 5.8); abrupt irregular boundary.

R-42+ inches; highly fractured metamorphic bedrock.

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; NE 1/4, NW 1/4, NE 1/4, Section 2, T. 14 N., R. 6 E. Humboldt Base Meridian.

Range in Characteristics: The soil is 40 to 60 inches deep to bedrock. The mean annual soil temperature is 47° to 59°F.; the mean January soil temperature is 33 to 42°F.; the mean July soil temperature is 62 to 73°F. The soil temperature at a depth of 20 inches exceeds 41°F. from March 31 through mid-December and exceeds 47°F. from mid-March through November 30. The soil is dry between the depths of 4 and 12 inches from mid-July until mid-October in most years and is moist in some or all parts the remainder of the year. The base saturation throughout the soil is less than 60 percent.

The A horizons are brown, grayish brown, pale brown, yellowish brown, or light brownish gray or light yellowish brown (10YR 5/2, 5/3, 5/4, 6/3; 7.5YR 4/3; 2.5Y 6/2, 6/4). Moist colors are very dark brown, dark brown, dark grayish brown, or light olive brown (10YR 2/2, 3/3; 7.5YR 3/2, 4/3; 2.5Y 4/2, 5/4). Dark colors do not meet mollic criteria because they are too thin. It is very gravelly loam or gravelly loam. Rock fragments are 20 to 90 percent by volume. Reaction is slightly acid to very strongly acid.

The Bw horizons are brown, light yellowish brown or very pale brown (10YR 6/4, 6/5, 7/4; 7.5YR 5/4). Moist colors are brown, dark brown, yellowish brown, light yellowish brown, or light brown (10YR 5/4, 6/4; 7.5YR 3/4, 4/4, 5/4; 2.5Y 5/4). It is very gravelly, or very cobbly loam or clay loam with 1 to 2 percent more clay content than the A horizon. Rock fragments are 35 to 70 percent by volume. Reaction is slightly acid to medium acid.

The C horizon is brown, very pale brown, or light yellowish brown (7.5YR 5/4; 10YR 6/4, 6/5, 7/4). Moist colors are brown, dark brown, yellowish brown or light olive brown (10YR 5/4, 6/4; 7.5YR 3/4, 4/4, 5/4; 2.5Y 5/4). It is very gravelly clay loam. Rock fragments are 55 to 85 percent by volume. Reaction is medium acid.

Use and Vegetation: Used mainly for commercial conifer production. Native vegetation is Douglas-fir, sugar pine, incense cedar, ponderosa pine, white fir, tanoak,

madrone, black oak, live oak, whiteleaf manzanita, deerbrush, modesty flower, bracken fern, longleaf mahonia, vetch, bedstraw and bluegrass.

CLALLAM FAMILY, VERY DEEP

The Clallam family, very deep consists of moderately well drained soils formed in material weathered from metamorphic rocks, glacial till, colluvium or alluvium. These soils occur on moraines, alluvial deposits and landslide deposits. Slopes range from 0 to 70 percent. The mean annual precipitation is 40 to 80 inches and the mean annual temperature is about 51° F. Elevations are 1,000 to 4,800 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, mixed, mesic Dystric Xerochrepts.

Typical Pedon: Clallam family, very deep, gravelly sandy loam - on a 1 percent slope at 1,300 feet elevation, under a cover of Douglas-fir, madrone and Oregon white oak. (Colors are for dry soil unless otherwise stated).

Oi-1 to 0 inches; scattered broad leaves.

A1-0 to 5 inches; brown (10YR 5/3) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; massive; very friable, slightly sticky and nonplastic; common very fine roots; 25 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

A2-5 to 8 inches; brown (10YR 5/3) very gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak very fine subangular blocky structure; very friable slightly sticky and nonplastic; common, very fine and fine roots; many very fine tubular and interstitial pores; 40 percent pebbles; medium acid (pH 5.9); clear smooth boundary.

Bw1-8 to 17 inches; yellowish brown (10YR 5/4) very gravelly sandy loam, dark brown (10YR 4/3) moist; very weak fine subangular blocky structure; very friable, slightly sticky and nonplastic; common, very fine, fine and medium roots; many very fine and fine interstitial pores; 45 percent pebbles; medium acid (pH 5.8); gradual smooth boundary.

Bw2-17 to 31 inches; brownish yellow (10YR 6/6) very gravelly sandy loam, dark yellowish brown (10YR 4/4) moist; very weak medium subangular blocky structure;

very friable, slightly sticky and nonplastic; few very fine and fine roots; many very fine and fine interstitial pores; 40 percent pebbles; medium acid. (pH 5.9); gradual wavy boundary.

C-31 to 60+ inches; light yellowish brown (10YR 6/4) very gravelly loamy sand, brown (10YR 5/3) moist;

massive; very friable, nonsticky and nonplastic; few fine and medium roots; 80 percent pebbles; medium acid (pH 5.6).

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; 0.6 miles west-southwest of Fort Goff; SW 1/4 NW 1/4 Section 5, T. 46 N., R. 12 W.

Range in Characteristics: The soil is greater than 60 inches deep to bedrock or unconsolidated alluvium. The mean annual soil temperature is 47 to 59° F.; the mean January soil temperature is 35 to 45° F.; the mean July soil temperature is 55 to 70° F. The soil temperature exceeds 41° F. from February 20 to December 1, and is greater than 47° F. from March 20 to November 15. The soil between the depths of 14 and 41 inches is dry in all parts from July 15 to October 20, and moist in some or all parts the rest of the year. The soil is medium acid to neutral. The base saturation is less than 60 percent throughout the soil.

The A horizon is brown, pinkish gray, light brown, grayish brown, light brownish gray, pale brown, light olive brown, or light yellowish brown (7.5YR 5/2, 5/4, 6/2, 6/4; 10YR 5/2, 5/3, 6/2, 6/3; 2.5Y 5/2, 5/4, 6/2, 6/4). Moist colors are dark brown, very dark grayish brown, dark grayish brown, or olive brown (7.5YR 3/2, 3/4, 4/2, 4/4; 10YR 3/2, 3/3, 4/2, 4/3; 2.5Y 3/2, 4/2, 4/4). The A horizon does not meet thickness criteria for a mollic horizon. Textures are gravelly or very gravelly loam or sandy loam, with 15 to 60 percent gravel. Reaction is medium to slightly acid.

The B horizon is light brown, reddish yellow, pink, yellowish brown, light yellowish brown, brownish yellow, yellow, or pale yellow (7.5YR 6/4, 6/6, 7/4, 7/6; 10YR 5/4, 5/6, 6/4, 6/6, 7/6; 2.5Y 5/4, 6/4, 6/6). Moist colors are brown, strong brown, dark yellowish brown, yellowish brown, light olive brown, light yellowish brown, or olive yellow (7.5YR 5/4, 5/6; 10YR 4/3, 4/4, 4/6, 5/3, 5/4; 2.5Y 5/4, 6/4, 6/6). It is very gravelly or extremely gravelly, sandy loam, loam, sandy clay loam or clay loam with 50 to 75 percent gravel. Reaction is medium acid to neutral.

The C horizon is pink, light brown, reddish yellow, pale brown, light yellowish

brown, brownish yellow, or very pale brown (5YR 7/3, 7/4; 7.5YR 6/4, 6/6, 7/4; 10YR 6/3, 6/4, 6/6, 7/3, 7/4). Moist colors are light reddish brown, brown, strong brown, or yellowish brown (5YR 6/3, 6/4; 7.5YR 5/4, 5/6; 10YR 5/3, 5/4). It is extremely gravelly sandy

loam or loamy sand with greater than 70 percent gravel.
Reaction is medium acid to neutral.

Use and Vegetation: Used for timber production, wildlife, and recreation. The native vegetation includes

Douglas-fir, sugar pine, madrone, tanoak, bigleaf maple, Oregon white oak, California black oak, canyon live oak, mountain dogwood, modesty flower, snowberry, swordfern, deerbrush and poison oak.

COBOC FAMILY

The Coboc family consists of very deep well drained soils that formed in alluvium and colluvium from mixed metamorphic rock types. These soils are on high terraces, landslide deposits and mountain footslopes. Slopes range from 2 to 50 percent. The mean annual precipitation is 30 to 60 inches and the mean annual temperature is about 50° F. Elevations are 1,200 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Fine, kaolinitic, mesic Ultic Palexeralfs.

Typical Pedon: Coboc family gravelly loam - on a 45 percent southwest-facing convex slope at 1,750 feet elevation, under ponderosa pine, Douglas-fir, incense cedar, madrone, California black oak, deerbrush, whiteleaf manzanita and forbs. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inch; fresh and partially decomposed needles and twigs.

A1-0 to 1 inch; brown (7.5YR 5/4) gravelly loam, reddish brown (5YR 4/3) moist; massive; hard, friable, slightly sticky and slightly plastic; common roots; common very fine tubular and few very fine interstitial pores; 20 percent pebbles; slightly acid (pH 6.3); clear smooth boundary.

A2-1 to 6 inches; brown (7.5YR 5/4) gravelly loam, reddish brown (5YR 4/3) moist; weak fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common roots; common very fine tubular and interstitial pores; 20 percent pebbles; slightly acid (pH 6.1); gradual smooth boundary.

Bt1-6 to 18 inches; yellowish red (5YR 5/6) gravelly clay loam, reddish brown (5YR 4/4) moist; moderate very fine and fine subangular blocky structure; very hard, friable, sticky and plastic; few thin clay films on ped faces; common roots; few very fine tubular and common very fine and fine interstitial pores; 25 percent pebbles; medium acid (pH 5.9); diffuse boundary.

Bt2-18 to 40 inches; yellowish red (5YR 5/6) gravelly clay, yellowish red (5YR 5/6) moist; moderate medium angular blocky structure; very hard, firm, very sticky and very plastic; continuous moderately thick clay films on ped faces and pores; few roots;

common very fine and fine tubular pores; 25 percent pebbles; strongly acid (pH 5.5); diffuse boundary.

Bt3-40 to 60+ inches; reddish yellow (5YR 6/6) gravelly clay loam, yellowish red (5YR 5/6) moist; weak coarse angular blocky structure; very hard, firm, very sticky and plastic; many moderately thick clay films on ped faces and pores; very few roots; few very fine tubular pores; 25 percent pebbles; medium acid (pH 5.7)

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; about 2.5 miles northeast of the town of Seiad Valley; SW 1/4 NW 1/4 Section 5, T. 46 N., R. 11 W.

Range in Characteristics: The soil is 60 or more inches deep. Mean annual soil temperature is 47 to 58° F.; mean January soil temperature is 36 to 46° F.; mean July soil temperature is 58 to 75° F. The soil temperature exceeds 41° F. from February 20 to December 1 and exceeds 47° F. from March 20 to November 15. The soil between the depths of 8 to 24 inches is dry for 90 or more days from mid-July to mid-October in most years and is moist in some or all parts the rest of the year. The base saturation from 6 to 60 inches is between 35 and 75 percent.

The A horizon is brown, dark brown or yellowish red (7.5YR 4/4, 5/4; 5YR 5/6). Moist colors are very dark grayish brown or reddish brown (10YR 3/2; 5YR 4/4, 4/3). It is very gravelly loam, gravelly loam or loam with 20 to 27 percent clay. Gravel ranges from 15 to 30 percent. Reaction is medium or slightly acid.

The Bt horizon is reddish yellow, yellowish red, or red (7.5YR 6/6; 5YR 5/6, 6/6; 2.5YR 5/7, 5/8). Moist colors are reddish yellow, reddish brown, yellowish red or red (7.5YR 6/6; 5YR 4/4, 5/4, 5/6; 2.5YR 4/6, 5/6). It is gravelly clay loam, clay loam or gravelly clay. Gravel ranges from 20 to 35 percent. It has a weighted average of greater than 35 percent clay. Clay content does not decrease by as much as 20 percent of the maximum amount of clay to a depth of 60 inches. Reaction is strongly acid to neutral.

Use and Vegetation: Used mainly as watershed, wildlife habitat and timber production. Vegetation is ponderosa pine, Douglas-fir, incense cedar, madrone, knobcone pine, California black oak, Oregon white oak, canyon live oak, deerbrush, whiteleaf manzanita and forbs.

COWICHE FAMILY

The Cowiche family consists of deep well drained soils that formed in alluvium and materials weathered from andesitic or basaltic rock. These soils are on terraces and lava flows on volcanic uplands. Slopes range from 2 to 9 percent. The mean annual precipitation is 9 to 12 inches and mean annual temperature is about 52° F. Elevations are 4,200 to 4,600 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Fine-loamy, mixed, mesic, Aridic Argixerolls.

Typical Pedon: Cowiche family silt loam - on a 2 percent sloping flat at 4,581 feet elevation, under brush, ponderosa pine and juniper. (Colors are for dry soil unless otherwise stated).

A1-0 to 3 inches; brown (10YR 5/3) silt loam, dark brown (7.5YR 3/2) moist; moderate very fine, fine, medium and coarse platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and fine interstitial and vesicular pores; neutral (pH 7.0); abrupt smooth boundary.

A2-3 to 8 inches; brown (10YR 5/3) loam, dark brown (7.5YR 3/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine and few fine roots; few very fine interstitial pores; neutral (pH 7.0); clear smooth boundary.

Bt1-8 to 18 inches; brown (10YR 5/3) sandy clay loam, dark brown (7.5YR 3/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few thin clay films on ped faces; few very fine and fine roots; few very fine and fine tubular pores; neutral (pH 7.0); clear smooth boundary.

Bt2-18 to 42 inches; brown (7.5YR 5/4) sandy clay loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; slightly hard, very

friable, slightly sticky and slightly plastic; few thin clay films in pores; few very fine and fine tubular pores; 10 percent saprolite pebbles; neutral (pH 7.0).

R-42+ inches; hard andesitic rock.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; about 2 1/2 miles southeast of Cedar Mountain, 2 miles northeast of Antelope Sink, 50 yards south of dirt road; NW corner of SW 1/4 SE 1/4 Section 33, T. 45 N., R. 1 E.

Range in Characteristics: Depth to a lithic contact is 40 to 60 inches. Mean annual soil temperature is 49 to 60° F.; mean January soil temperature is 38 to 47° F.; and mean July soil temperature is 58 to 72° F. The soil temperature exceeds 41° F. from March 20 to November 30 and exceeds 47° F. from April 10 to November 10. The soil between the depths of 6 and 17 inches is dry in all parts from June 1 to October 20 and is moist in some or all parts the rest of the year. The mollic epipedon is 10 to 19 inches thick. Base saturation is greater than 75 percent throughout the upper 30 inches of soil.

The A horizon is grayish brown or brown (10YR 5/2, 5/3). Moist colors are very dark brown or dark brown (10YR 3/2, 3/3; 7.5YR 3/2). It is loam, sandy loam, or silt loam with 12 to 23 percent clay and 0 to 5 percent gravel. Reaction is slightly acid to neutral.

The Bt horizon is brown, pale brown, or light yellowish brown (7.5YR 5/4; 10YR 5/3, 6/3, 6/4). Moist colors are dark brown (7.5YR 3/2, 3/4; 10YR 3/3). It is sandy loam, loam, or sandy clay loam with 19 to 26 percent clay and 0 to 15 percent gravel and cobbles. Reaction is neutral to mildly alkaline.

Use and Vegetation: Used mainly as rangeland and wildlife habitat with some timber production. Native vegetation includes ponderosa pine, juniper, sagebrush, rabbitbrush, bitterbrush and perennial grasses.

DEADFALL FAMILY

The Deadfall family consists of moderately deep, well drained soils that formed in material weathered from ultramafic rocks with large amounts of serpentinitic minerals. Deadfall soils are on mountain sideslopes and ridges. Slopes range from 30 to 70 percent. Mean annual precipitation is 50 to 80 inches and the mean annual temperature is about 37° F. Elevations are 6,200 to 8,900 feet. The climate is mediterranean, with warm dry summers and cold snowy winters.

Taxonomic Class: Loamy-skeletal, serpentinitic Typic Cryorthents.

Typical Pedon: Deadfall family very gravelly sandy loam - on a 45 percent southwest-facing slope at 7,600 feet elevation, under a sparse cover of huckleberry oak, rabbitbrush, bunchgrasses and occasional conifers (70 percent gravel pavement). (Colors are for dry soil unless otherwise stated. When described the soil was slightly moist throughout).

O-1/2 to 0 inches; very sparse, scattered, undecomposed litter.

A1-0 to 6 inches; pale brown (10YR 6/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and few fine roots; many very fine interstitial pores; 35 percent pebbles, 10 percent cobbles; slightly acid (pH 6.5); clear smooth boundary.

C1-6 to 14 inches; yellowish brown (10YR 5/4) very gravelly sandy loam, brown (10YR 4/3) moist; weak very fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine interstitial pores; 42 percent pebbles, 3 percent cobbles and stones; neutral (pH 7.0); gradual wavy boundary.

C2-14 to 24 inches; yellowish brown (10YR 5/4) extremely gravelly sandy loam, brown (10YR 4/3) moist; weak very fine granular structure breaking to single grain; soft, very friable, slightly sticky and nonplastic; common very fine roots; many very fine interstitial pores; 50 percent pebbles, 25 percent cobbles and stones; mildly alkaline (pH 7.5); abrupt wavy boundary.

R-24+ inches; highly fractured ultramafic rock.

Type Location: Shasta-Trinity National Forest; Siskiyou County, California; about 7 miles west of the city of Mt. Shasta, 1 1/2 miles east of Mt. Eddy summit; NW 1/4 NW 1/4 Section 17, T. 40 N., R. 5 W. Hand dug pit along jeep trail.

Range in Characteristics: The thickness of the solum and depth to bedrock ranges from 20 to 40 inches. Rock fragments are mainly pebbles in the A horizon and comprise 35 to 45 percent of the volume. Pebbles and stones cover 50 to 100 percent of the ground surface. The C horizon contains 50 to 85 percent pebbles, cobbles and stones. The mean annual soil temperature ranges from 35 to 40° F., and the mean summer soil temperature varies from 50 to 57° F. There is no effective O horizon.

The A horizon is grayish brown, brown, yellowish brown, pale brown, light yellowish brown, olive brown or pale brown (10YR 5/2, 5/3, 5/4, 6/3, 6/4; 2.5Y 4/4, 6/4, 7/4) dry and very dark grayish brown, dark brown, dark yellowish brown or olive brown (10YR 3/2, 3/3, 4/3, 4/4; 2.5Y 3/4) moist. It is sandy loam or loamy sand with 35 to 45 percent gravel. It has single grain, weak or moderate granular structure. Reaction is neutral to mildly alkaline. The dark colors of a mollic epipedon are only in the upper 3 to 5 inches of some pedons.

The C horizon is yellowish brown, light yellowish gray or pale yellow (10YR 5/4; 2.5Y 6/3, 6/2, 7/4) dry and dark yellowish brown, dark brown, brown, dark grayish brown or olive brown (10YR 3/4, 4/3, 4/4; 2.5Y 4/2, 4/5) dry. It is sandy loam or loam with 50 to 85 percent rock fragments. It is single grain or has weak granular structure. Reaction is neutral to mildly alkaline.

The R horizon is fractured unweathered, serpentinitized peridotite.

Use and Vegetation: Watershed and wildlife. The natural vegetation is perennial bunchgrass, phlox, mountain hemlock, beargrass, a few scattered Jeffery pine, western white pine and red fir. Vegetation is sparse, with gravel pavement over 50 to 100 percent of the ground surface.

DEADWOOD FAMILY

The Deadwood family consists of shallow, well drained soils formed in residuum from metamorphic rocks. These soils occur on mountain sideslopes and narrow ridges. Slopes range from 50 to 90 percent. The mean annual precipitation is 45 to 90 inches and the mean annual temperature is 54°F. Elevations are 500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, mixed, mesic Dystric Lithic Xerochrepts.

Typical Pedon: Deadwood family extremely gravelly loam - on a 67 percent southeast-facing slope at 1,300 feet elevation under a cover of hardwoods and mixed conifers. (Colors are for dry soil unless otherwise stated.)

O-1/2 to 0 inches; scattered broad leaves and twigs.

A1-0 to 2 inches; grayish brown (10YR 5/2) extremely gravelly loam, very dark brown (10YR 2/2) moist; strong very fine granular structure; soft, very friable, slightly sticky and nonplastic; common fine roots; 70 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

Bw-2 to 10 inches; light gray (10YR 7/2) extremely gravelly loam, brown (10YR 5/3) moist; weak very fine and fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common fine and few medium roots; 70 percent pebbles; medium acid (pH 5.9); clear irregular boundary.

C-10 to 16 inches; light gray (2.5Y 7/2) extremely gravelly loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, sticky and slightly plastic; few fine and medium roots; 75 percent pebbles; medium acid (pH 5.8); abrupt smooth boundary.

R-16+ inches; highly fractured and hard metamorphic bedrock.

Type Location: Ukonom District, Klamath National

Forest; Siskiyou County, California; about 3 miles southwest of Pony Peak, 4.8 miles northeast of Dillon Mtn. and about 0.2 miles northwest of the Klamath River; N 1/2 Section 29, T. 14 N., R. 6 E. Humboldt Base Meridian.

Range in Characteristics: Deadwood soils are less than 20 inches deep to highly fractured metamorphic bedrock. The mean annual soil temperature is 47 to 59°F. The mean January soil temperature is 34 to 45°F.; the mean July soil temperature is 62 to 83°F. The soil temperature at the bedrock contact exceeds 41°F. from March 31 through mid-December and exceeds 47°F. from mid-March through November 30. The soil is dry between the depths of 4 to 12 inches from mid-July until mid-October in most years and is moist in some or all parts the remainder of the year. The base saturation is less than 60 percent throughout the soil.

The A horizon is pale brown, grayish brown or dark grayish brown (10YR 4/2, 4/3, 5/2, 6/3) dry, dark yellowish brown, very dark grayish brown, very dark brown, or black (10YR 2/1, 2/2, 3/2, 4/2) moist. It is very gravelly or extremely gravelly loam with 70 to 85 percent coarse fragments. Reaction is medium acid to strongly acid.

The B horizon is light gray, light yellowish brown, or very pale brown (10YR 6/4, 7/2, 7/4) dry, brown (10YR 5/3) moist. It is extremely gravelly loam with 60 to 75 percent coarse fragments. Reaction is medium acid to strongly acid.

The C horizon is light gray (2.5Y 7/2) dry, pale brown (10YR 6/3) moist. It is extremely gravelly loam with 75 to 90 percent coarse fragments. Reaction is medium acid.

Use and Vegetation: Used mainly for wildlife habitat, woodland and watershed. Native vegetation is canyon live oak, madrone, few Douglas-fir and sugar pine, poison oak, modesty flower, snowberry, sword fern, bracken fern and grasses. There is much bare ground.

DECY FAMILY

The Decy family consists of deep and very deep well drained residual soils that formed from mica schist rocks. These soils occur on dissected mountain sideslopes and landslide benches. Slopes range from 30 to 70 percent. The mean annual precipitation is 30 to 55 inches and the mean annual temperature is about 52°F. Elevations are 1,500 to 5,200 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, mixed, mesic Typic Xerumbrepts.

Typical Pedon: Decy family very gravelly loam - on a 58 percent southeast-facing slope at 4,160 feet elevation, under a cover of mixed conifers, shrubs and herbs. (Colors are for dry soil unless otherwise stated).

Oi-2 to 1 inches; scattered fresh conifer needles and twigs.

Oe-1 to 0 inches; highly decomposed organic material.

A1-0 to 2 inches; dark grayish brown (10YR 4/2) very gravelly loam, very dark gray (10YR 3/1) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine interstitial pores; 40 percent pebbles; neutral (pH 7.0); clear smooth boundary.

A2-2 to 8 inches; grayish brown (10YR 5/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and coarse roots; 50 percent pebbles; neutral (pH 7.0); clear wavy boundary.

AB-8 to 13 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and nonplastic; common very fine and few fine roots; 35 percent pebbles and 5 percent cobbles and stones; slightly acid (pH 6.5); clear smooth boundary.

Bw1-13 to 17 inches; grayish brown (2.5YR 5/2) extremely stony loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and nonplastic; few fine and

medium roots; 35 percent pebbles and 40 percent cobbles and stones; slightly acid (pH 6.5); clear wavy boundary.

Bw2-17 to 60+ inches; light olive gray (5Y 6/2) very stony loam, dark grayish brown (2.5YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; few very fine, fine and medium roots; 20 percent pebbles, 20 percent cobbles and 40 percent stones; slightly acid (pH 6.2).

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; SE 1/4 NE 1/4 NE 1/4 Section 32, T. 47 N., R. 9 W.

Range in Characteristics: The soil is 40 to 60+ inches deep to bedrock. The mean annual soil temperature is 47 to 59°F.; the mean January soil temperature is 36 to 45°F.; the mean July soil temperature is 55 to 73° F. The soil temperature exceeds 41°F. from March 20 to November 15. The soil between the depths of 9 to 26 inches is dry in all parts from July 15 to October 20, and is moist in some or all parts the rest of the year.

The A horizon is grayish brown, olive gray, dark grayish brown or brown (2.5Y 5/2; 5Y 5/2; 10YR 4/2, 5/2, 5/3). Moist colors are very dark gray, or very dark grayish brown (5Y 3/1; 10YR 3/1, 3/2). It is gravelly loam or very gravelly loam, with 20 to 55 percent gravel. Reaction is slightly acid to neutral.

The Bw horizon is grayish brown, light olive gray or brown (2.5Y 5/2; 5Y 6/2; 10YR 5/3). Moist colors are dark gray, very dark gray or dark grayish brown (2.5Y 4/2; 5Y 3/1; 10YR 4/2). It is very stony loam, very stony sandy loam or extremely stony loam. There are 25 to 30 percent gravels, 10 to 20 percent cobbles and 20 to 40 percent stones. Reaction is slightly acid to neutral.

Use and Vegetation: Used primarily for timber production. Other uses include rangeland and wildlife habitat. Native vegetation includes Douglas-fir, ponderosa pine, white fir, incense cedar, sugar pine, madrone, black oak, white oak, deerbrush, squaw carpet, white-leaf manzanita, Oregon grape, snowberry, vetch, fescue and brome.

DEETZ FAMILY

The Deetz family consists of very deep, somewhat excessively drained soils formed in glacial outwash mixed with volcanic rock and ash sources. Deetz family soils are on glacial outwash fans and plains. Slopes range from 2 to 15 percent. The mean annual precipitation is 25 to 35 inches and the mean annual temperature is about 48°F. Elevations are 4,200 to 4,600 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Ashy, mesic Dystric Xeropsamments.

Typical Pedon: Deetz family gravelly loamy fine sand - on a 4 percent west-facing slope at 3,940 feet elevation, under manzanita, bitterbrush, squaw carpet and incense cedar. (Colors are for dry soil unless otherwise noted. When described, 5/28/74, the soil was moist throughout).

0-1/2 to 0 inches; new and partially decomposed leaves, needles, twigs, bark and other organic debris.

A1-0 to 1 1/2 inches; very dark grayish brown (10YR 3/2) gravelly loamy fine sand, black (10YR 2/1) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; many very fine and fine roots; 15 percent pebbles; medium acid (pH 6.0); abrupt smooth boundary.

A2-1 1/2 to 4 inches; dark brown (10YR 4/3) gravelly loamy fine sand, very dark brown (10YR 2/2) and very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; 15 percent pebbles; medium acid (pH 6.0); abrupt smooth boundary.

A3-4 to 7 inches; brown (10YR 5/3) gravelly loamy sand, dark brown (10YR 3/3) moist; very weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; 15 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

C1-7 to 12 inches; pale brown (10YR 6/3) gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; very weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine, fine and medium roots; 15 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

C2-12 to 18 inches; light yellowish brown (10YR 6/4) gravelly loamy sand, dark yellowish brown (10YR

4/4) moist; very weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many medium, common very fine and fine roots; 15 percent pebbles; medium acid (pH 6.0); abrupt wavy boundary.

C3-18 to 28 inches; pale brown (10YR 6/3) gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; many medium, common very fine, and fine roots; 23 percent pebbles and 2 percent cobbles; medium acid (pH 6.0); clear wavy boundary.

C4-28 to 38 inches; pale brown and very pale brown (10YR 6/3 and 7/3) gravelly loamy sand, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; 30 percent pebbles and 2 percent cobbles; medium acid (pH 6.0); abrupt wavy boundary.

2C5-38 to 53 inches; pale brown (10YR 6/3) very gravelly sand, strong brown (7.5YR 4/6) moist; single grain; loose, nonsticky and nonplastic; many medium and few very fine and fine roots; 38 percent pebbles and 7 percent cobbles; medium acid (pH 6.0); abrupt wavy boundary.

3C6-53 to 65+ inches; gray and light gray (10YR 6/1 and 7/1) very gravelly sand, color from the sand grains; single grain; loose, nonsticky and nonplastic; many medium and few very fine and fine roots; 48 percent pebbles and 2 percent cobbles; medium acid (pH 6.0).

Type Location: Siskiyou County, California; about 2 miles south of Weed and just north of Black Butte; 1,600 feet south and 1,200 feet east of the northwest corner Section 19, T. 41 N., R. 4 W. It is about 30 feet west of a dirt road.

Range in Characteristics: The soils are 60+ inches deep to stratified clean sand and/or gravel. The mean annual soil temperature is 51 to 55°F.; the mean winter soil temperature is 31 to 36°F.; and the mean annual summer soil temperature is 68 to 74°F. Soil between the depths of 15 and 48 inches is usually dry in all parts from mid-July to mid-October and is moist in some or all parts the rest of the year. Soil temperature at depth of 20 inches exceeds 41°F. from April 1 to December 1 and exceeds 47°F. from April 15 to November 1. The weighted average of the 10 to 40 inch control section is less than 35 percent rock fragments, 35 to 45 percent very coarse and coarse sands, and 20 to 30 percent fine

and very fine sands. Total sand ranges from 70 to 85 percent and silt from 15 to 30 percent. Most of the sands and rock fragments are pyroclastic and include cinders, pumice and ash. The epipedon is 5 to 10 inches thick and is dominated by volcanic ash. The surface soil is too thin or the base saturation is too low to qualify for a mollic or umbric epipedon. The base saturation ranges from 40 to 70 percent in the A horizon and from 15 to 50 percent at depths of 10 to 40 inches in the C horizon and commonly decreases with depth. The NaF pH ranges from 9.6 to 10.7 throughout the soil.

The A horizon is grayish brown, dark grayish brown, very dark grayish brown, brown or dark brown (10YR 3/2, 3/3, 4/2, 5/2, 5/3). Moist colors are black, very dark brown, very dark grayish brown, or dark brown (10YR 2/1, 2/2, 3/2, 3/3) moist. It is sand, loamy fine sand or loamy sand after rubbing and has 15 to 35 percent rock fragments. It is gravelly or stony. It has greater than 40 percent coarse and very coarse sands and less than 25 percent fine and very fine sands. Reaction is very strongly to medium acid.

The AC horizon, when present, is grayish brown, light yellowish brown, pale brown, or light brownish gray (10YR 5/2, 6/2, 6/3, 6/4). Moist colors are olive brown, dark brown or very dark grayish brown (2.5 Y 3/4; 10YR 3/2, 3/3). It is sand or loamy sand after rubbing and has 5 to 35 percent gravel and/or cobbles. Reaction is strongly or medium acid.

The C horizon is light gray, very pale brown, pale brown, or light yellowish brown (10YR 6/3, 6/4, 7/1, 7/2, 7/3, 7/4) weakly to strongly stratified loamy sand or sand. Moist colors are dark grayish brown, brown, or olive brown (10YR 4/2, 5/3; 2.5Y 4/2, 4/4). It has 5 to 35 percent gravel and cobbles in the upper part and 5 to 60 percent below 40 inches. In some pedons there are layers that are slightly brittle below a depth of 40 inches.

Use and Vegetation: Used primarily for woodland production, recreation and wildlife habitat. Vegetation is white fir, ponderosa pine, Douglas-fir, incense cedar, manzanita, squaw carpet, bitterbrush, dryland sedge, grasses, shrubs and forbs. Many areas have been burned over several times.

DE MASTERS FAMILY

The De Masters family consists of deep, well drained soils that formed in residuum from weathering products from extrusive igneous rocks that include tuff, tuff breccia and andesite. These soils are on mountain sideslopes and footslopes. Slopes range from 9 to 30 percent. The mean annual precipitation is 20 to 40 inches and the mean annual air temperature is about 42° F. Elevations are 4,500 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Fine-loamy, mixed, frigid, Pachic Ultic Argixerolls.

Typical Pedon: De Masters family loam - on a 16 percent northwest-facing slope at 5,280 feet elevation, under a cover of white fir, Douglas-fir, incense cedar, chinquapin and vetch. (Colors are for dry soil unless otherwise stated).

O-2 to 0 inches; weakly matted, fresh and slightly decomposed conifer needles and twigs underlain by highly decomposed litter.

A1-0 to 1 inches; dark brown (10YR 3/3) loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; many fine interstitial pores; neutral (pH 7.0); abrupt smooth boundary.

A2-1 to 5 inches; brown (7.5 YR 4/4) gravelly loam, dark brown (7.5YR 3/2) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine, common fine and medium roots; few fine tubular, common fine and medium interstitial pores; neutral (pH 7.0); clear smooth boundary.

Bt1-5 to 15 inches; brown (7.5YR 4/4) gravelly loam, dark reddish brown (5YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; thin clay films in pores and as bridges and very few clay films on ped faces; few very fine, common fine, medium, and coarse roots; few very fine interstitial and tubular pores; slightly acid (pH 6.5); clear wavy boundary.

Bt2-15 to 25 inches; brown (7.5YR 5/4) gravelly loam, dark reddish brown (5YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly

hard, very friable, sticky and plastic; common thin clay films on ped faces and in pores; few very fine and coarse, common fine and medium roots; few very fine and fine interstitial and tubular pores; slightly acid (pH 5.4); gradual wavy boundary.

Bt3-25 to 42 inches; brown (7.5YR 4/4) gravelly loam, dark brown (7.5YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common thin clay films in pores and on ped faces and few thin clay films as bridges; few very fine, medium and coarse, common fine roots; few very fine tubular pores; slightly acid (pH 6.3); gradual wavy boundary.

Bt4-42 to 47 inches; brown (10YR 4/3) gravelly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; very few thin clay films on ped faces and in pores; few very fine, fine and medium roots; few very fine tubular pores; medium acid (pH 6.0); clear wavy boundary.

R-47+ inches; highly fractured rock, with pockets of soil and weathered rock in fractures.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; SW 1/4 SE 1/4 Section 27, T. 47 N., R. 4 W.

Range in Characteristics: De Masters family soils are 40 to 60 inches deep. The mean annual soil temperature is 39 to 47° F.; mean January soil temperature is 32 to 36° F.; mean July soil temperature is 47 to 57° F. The soil temperature at a depth of 20 inches exceeds 41° F. from April 10 to November 20 and exceeds 47° F. from May 15 to October 25. Between the depths of 4 and 12 inches the soil is dry from August 1 until October 15 and is moist in some or all parts the rest of the year. The mollic epipedon is greater than 20 inches thick. Base saturation is 50 to 75 percent in the upper 30 inches of soil.

The A horizon is brown, dark brown, dark yellowish brown, or grayish brown (7.5YR 4/2, 4/4; 10YR 3/3, 4/3, 4/4, 5/2, 5/3). Moist colors are dark brown, very dark grayish brown or very dark brown (7.5YR 3/2; 10YR 2/2, 3/2, 3/3). It is a loam or a gravelly loam. Reaction is medium acid to neutral.

The Bt horizon is brown, dark brown, dark yellowish brown, or grayish brown (7.5YR 4/2, 4/4, 5/4; 10YR 4/3, 4/4, 5/2, 5/3). Moist colors are dark brown or dark reddish brown (5YR 3/2, 3/3; 7.5YR 3/2, 3/4; 10YR 3/3). It is loam, clay loam, cobbly loam, or gravelly loam. Reaction is very strongly acid to medium acid. There is greater than 3 percent clay increase from

overlying horizon.

Use and Vegetation: These soils are primarily used for timber. Native vegetation is ponderosa pine, Douglas-fir, incense cedar, white fir, red fir, snowberry, deerbrush, lupine, squaw carpet, forbs, bottlebrush squirreltail, Idaho fescue and other grasses.

DEVEN FAMILY

The Deven family consists of shallow, well drained soils that formed in materials weathered from andesitic and basaltic rock. Deven family soils are on mountain sideslopes and lava flows on volcanic uplands. Slopes range from 0 to 30 percent. The mean annual precipitation is 9 to 12 inches and the mean annual temperature is about 52° F. Elevations are 4,200 to 5,200 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Clayey, montmorillonitic, mesic Lithic Argixerolls.

Typical Pedon: Deven family loamy sand - on a 15 percent south-facing slope at 4,950 feet elevation, under juniper, big sagebrush, western mountain mahogany, rubber rabbitbrush and few perennial grasses. (Colors are for dry soil unless otherwise stated).

A1-0 to 1 inch; brown (10YR 5/3) loamy sand, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine interstitial pores; 5 percent cobbles; slightly acid (pH 6.5); clear smooth boundary.

Bt1-1 to 8 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium and fine subangular blocky structure; slightly hard, very friable, sticky and plastic; few thin clay films on ped faces; common very fine and few fine roots; common very fine tubular pores; 5 percent cobbles; slightly acid (pH 6.5), clear smooth boundary.

Bt2-8 to 15 inches; brown (10YR 4/3) cobbly clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few thin clay films on ped faces and in pores; few fine roots; common very fine tubular pores; 15 percent cobbles; slightly acid (pH

6.5); abrupt wavy boundary.

R-15+ inches; hard, slightly fractured basaltic or andesitic flow rock.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; 2/3 miles north of Bray, California, 1/2 mile south of Orr Mountain; SW 1/4 SE 1/4, Section 16, T. 44 N., R. 1 W.

Range in Characteristics: Depth to a lithic contact is less than 20 inches. Mean annual soil temperature is 45 to 60°F.; mean January soil temperature is 32 to 47°F.; and mean July soil temperature is 54 to 72°F. The soil temperature exceeds 41°F. from April 1 to November 25 and exceeds 47°F. from May 1 to November 1. The soil between a depth of 6 inches and the lithic contact is dry in all parts from June 10 to October 15. The mollic epipedon is 7 to 19 inches thick. Base saturation is greater than 75 percent throughout the soil.

The A horizon is grayish brown or brown (10YR 5/2, 5/3). Moist colors are very dark brown or very dark grayish brown (10YR 2/2, 3/2). It is loamy sand or fine sandy loam with 8 to 10 percent clay and 0 to 5 percent gravel and cobbles. Reaction is slightly acid to neutral.

The Bt horizon is dark grayish brown, dark brown, grayish brown or brown (10YR 4/2, 4/3, 5/2, 5/3). Moist colors are very dark grayish brown or dark brown (10YR 3/2, 3/3). It is clay loam, cobbly clay loam, sandy clay loam or cobbly sandy clay loam with 20 to 38 percent clay and 0 to 30 percent gravel and cobbles. The weighted average of the family control section is greater than 35 percent clay. Reaction is slightly acid to neutral.

Use and Vegetation: Used mainly as rangeland and wildlife habitat. Native vegetation includes juniper, few ponderosa pine, big sagebrush, mountain mahogany, rubber rabbitbrush and perennial grasses.

DUBAKELLA FAMILY

The Dubakella family consists of moderately deep and deep well drained soils that formed in residuum from weathered ultramafic rock. Dubakella family soils are on mountain sideslopes, benches and ridges. Slopes range from 15 to 70 percent. The mean annual precipitation is 30 to 80 inches and the mean annual temperature is about 53° F. Elevations are 1,000 to 5,200 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Clayey-skeletal, serpentinitic, mesic Mollic Haploxeralfs.

Typical Pedon: Dubakella family silt loam - on a 44 percent northeast-facing slope at 2,300 feet elevation, under Douglas-fir, Jeffrey pine, incense cedar, sugar pine, shrubs and forbs. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches; fresh loose conifer needles.

A1-0 to 3 inches; reddish brown (5YR 5/4) silt loam, dark reddish brown (5YR 3/3) moist; weak very fine and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; neutral (pH 6.5); clear smooth boundary.

A2-3 to 12 inches; reddish brown (5YR 5/4) gravelly silt loam, dark reddish brown (5YR 3/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common roots; neutral (pH 6.5); gradual smooth boundary.

Bt1-12 to 17 inches; reddish brown (5YR 4/4) very gravelly clay loam, dark reddish brown (5YR 3/4) moist; moderate coarse subangular blocky structure; hard, firm, sticky and plastic; few thin clay films on ped faces; common roots; neutral (pH 6.5); clear wavy boundary.

Bt2-17 to 33 inches; yellowish brown (10YR 5/4) very cobbly clay, dark brown (7.5YR 3/2) moist; strong medium and coarse angular blocky structure; extremely hard, extremely firm, very sticky and very plastic; common moderately thick clay films on ped faces; few roots; neutral (pH 6.5); gradual broken boundary.

C-33 to 36 inches; light yellowish brown (10YR 6/4) cobbly silty clay loam, brown or dark brown (10YR 4/3) moist; massive; slightly hard, friable, sticky

and plastic; very few roots; neutral (pH 6.4); abrupt broken boundary.

R-36+ inches; hard serpentinitic bedrock.

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; West Grider Creek, 1.5 miles West of Seiad Valley post office; NW 1/4 SE 1/4 Section 15, T. 46 N., R. 12 W.

Range in Characteristics: Depth to a lithic contact is 20 to 60 inches. Mean annual soil temperature is 48 to 57° F.; mean January soil temperature is 38 to 43° F.; mean July soil temperature is 58 to 76° F.; the soil temperature exceeds 41° F. from February 15 to December 15 and exceeds 47° F. from March 15 to November 15. The soil between the depths of 6 to 18 inches is dry in all parts from July 15 to October 20 in most years and moist in some or all parts the rest of the year.

The A horizon is very dark grayish brown, dark grayish brown, dark brown, dark yellowish brown, grayish brown, brown or reddish brown (10YR 3/2, 4/2, 4/3, 4/4, 5/2; 7.5YR 5/4; 5YR 5/4). Moist colors are black, very dark grayish brown or dark reddish brown (10YR 2/1, 3/2; 5YR 3/2, 3/3, 3/4). It is silt loam, loam or clay loam with 15 to 35 percent coarse fragments. Reaction is mildly alkaline or neutral.

The Bt horizon is yellowish brown, dark brown, brown, strong brown, yellowish red, or reddish brown (10YR 5/3, 5/4; 7.5YR 4/4, 5/6; 5YR 4/4, 4/6). Moist colors are dark brown or dark reddish brown (10YR 3/3; 7.5YR 3/2, 4/4; 5YR 3/4). It is clay or clay loam with 35 to 50 percent rock fragments. Reaction is slightly to mildly acid.

The C horizon when present is yellowish brown, light yellowish brown or brown (10YR 5/4, 6/4; 7.5YR 5/4). Moist colors are brown, dark brown or dark yellowish brown (10YR 4/3, 4/4; 7.5YR 4/4). It is loam, clay loam or silty clay loam with 35 to 70 percent rock fragments. Reaction is slightly acid to moderately alkaline.

Use and Vegetation: Used mainly for watershed, range, wildlife habitat and timber production. Native vegetation is sparse stands of Douglas-fir, Jeffrey pine, incense cedar, sugar pine, madrone, white oak, poison oak, prince's pine, star flower, bracken fern and Idaho fescue.

DUMPS

Dumps consist of uneven piles of waste rock from dredging operations. It is mainly on flood plains and in channels of the major rivers and streams. The hazard of erosion and deposition are very high and the areas are

subject to flooding under abnormal conditions. Dumps without major reclamation cannot support plants. The area is used for wildlife habitat and watershed.

ENDLICH FAMILY

The Endlich family consists of deep or very deep, well drained residual soils formed from granitic or metamorphic parent material. These soils occur on mountain sideslopes. Slopes range from 30 to 70 percent. The mean annual precipitation is 60 to 90 inches, mostly in the form of snow, and the mean annual air temperature is about 38° F. Elevations are 6,200 to 8,300 feet. The climate is high elevation mediterranean, with warm dry summers and cold snowy winters.

Taxonomic Class: Loamy-skeletal, mixed Dystric Cryochrepts.

Typical Pedon: Endlich family loam - on a 50 percent north-facing slope at 6,700 feet elevation, under a cover of red fir and mountain hemlock. (Colors are for dry soil unless otherwise stated.)

O-1/2 to 0 inches; matted conifer needles and twigs.

A1-0 to 1 inches; dark brown (7.5YR 3/2) loam, black (7.5YR 2/0) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; common very fine interstitial pores; 5 percent pebbles; extremely acid (pH 4.3); abrupt smooth boundary.

A2-1 to 4 inches; brown (7.5YR 5/4) gravelly fine sandy loam, dark brown (7.5YR 3/2) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; few very fine and fine, and moderate medium roots; few medium, and common very fine and fine pores; 17 percent pebbles; very strongly acid (pH 4.5); clear irregular boundary.

Bw1-4 to 13 inches; yellowish brown (10YR 5/4) very gravelly fine sandy loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine and fine, and common medium and coarse roots; common very fine, fine, and medium interstitial pores; 45 percent pebbles and 5 percent cobbles; very strongly acid (pH 5.0); clear smooth boundary.

Bw2-13 to 21 inches; light yellowish brown (10YR 6/4) extremely cobbly fine sandy loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and fine, and many medium and coarse roots; few medium, common fine, and many very fine interstitial pores; 50 percent pebbles and 30 percent cobbles; strongly acid (pH 5.5); clear wavy boundary.

C1-21 to 32 inches; light yellowish brown (10YR 6/4) extremely cobbly fine sandy loam, dark brown (10YR 4/3) moist; massive; soft, loose, nonsticky and nonplastic; few fine and coarse, common medium roots; many very fine interstitial pores; 40 percent pebbles and 40 percent cobbles; very strongly acid (pH 4.5); gradual wavy boundary.

C2-32 to 48 inches; light yellowish brown (10YR 6/4) extremely cobbly loamy fine sand, dark brown (10YR 4/3) moist; massive; soft, loose, nonsticky and nonplastic; few fine roots; many very fine interstitial pores; 50 percent pebbles and 40 percent cobbles; very strongly acid (pH 4.5). Clear smooth boundary.

R-48+ inches; slightly fractured gneiss.

Type Location: Oak Knoll District, Klamath National Forest; Jackson County, Oregon; near Cow Creek Glade; NE 1/4 NW 1/4 Section 18, T. 41 S., R. 1 W.

Range in Characteristics: The soil is 40 to 60+ inches deep in metamorphic or granitic rock. The mean annual soil temperature is 32 to 46° F.; the mean summer soil temperature is 40 to 46° F. where an O horizon is present, and 50 to 55° F. where no O horizon is present. The soil temperature exceeds 41° F. from May 15 to November 10, and is greater than 47° F. from July 1 to October 10. The soil between the depths of 8 and 23 inches is dry in all parts from August 10 to October 10. The base saturation is assumed to be less than 50 percent throughout the soil.

The A horizon is brown, strong brown, or dark yellowish brown (7.5YR 3/2, 4/2, 4/3, 5/4, 5/6; 10YR 4/3, 4/4, 5/3). Moist colors are dark reddish brown, dark brown or very dark grayish brown (5YR 3/4; 7.5YR 2/0, 3/2, 3/4; 10YR 3/2, 3/3). It is loam, gravelly loam, gravelly fine sandy loam or very gravelly loam, with 5 to 50 percent gravel, and 0 to 25 percent cobbles. Reaction is medium to very strongly acid.

The Bw horizon is brown, light brown, yellowish brown, pale brown, or light yellowish brown (7.5YR 5/4, 6/4; 10YR 5/4, 6/3, 6/4). Moist colors are dark brown, dark yellowish brown, or yellowish brown (7.5YR 4/4; 10YR 3/4, 4/3, 4/4, 5/4). It is loam, sandy loam, fine sandy loam or very fine sandy loam, and is gravelly, very or extremely gravelly, cobbly and very or extremely cobbly. There can be a slight clay increase in the B horizon. There are 10 to 50 percent gravels, and 0 to 40 percent cobbles. The family control section

has a weighted average of greater than 35 percent rock fragments. Reaction is medium to very strongly acid.

The C horizon is pale brown, light yellowish brown, or very pale brown (10YR 6/3, 6/4, 7/3, 7/4). Moist colors are dark brown, dark yellowish brown, brown, or yellowish brown (10YR 4/3, 4/4, 5/3, 5/4). It is loam, sandy loam, or fine sandy loam, and is gravelly, very or extremely gravelly, cobbly and very or extremely

cobbly. There is a slight clay decrease in the C horizon. There are 10 to 35 percent gravels, and 10 to 50 percent cobbles. Reaction is very strongly acid to slightly acid.

Use and Vegetation: Used for watershed, wildlife, recreation, and limited timber production. The native vegetation is red fir, mountain hemlock, western white pine, pinemat manzanita, pussy paws, pyrola and chimaphila.

ETCHEN FAMILY

The Etchen family soils consist of deep and very deep, well drained soils that formed in residuum and colluvium. These soils occur on terraces, mountain footslopes and glacial outwash deposits. Slopes range from 2 to 30 percent. The mean annual precipitation is about 12 to 20 inches and the mean annual temperature is about 41° F. Elevations are 4,600 to 6,000 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid Mollic Haploxeralfs.

Typical Pedon: Etchen family sandy loam - on a 2 percent slope at 4,660 feet elevation, under a cover of Jeffrey pine, western juniper, shrubs, forbs and grasses. (Colors are for dry soil unless otherwise stated).

O-0 to 1 inch; fresh needles and twigs.

A1-0 to 2 inches; light brownish gray (10YR 6/2) sandy loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine and fine interstitial pores; neutral (pH 7.0); clear wavy boundary.

A2-2 to 6 inches; light brownish gray (10YR 6/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium platy structure; slightly hard, very friable, nonsticky and nonplastic; common very fine roots; common very fine and fine interstitial pores; neutral (pH 7.0); clear smooth boundary.

A3-6 to 9 inches; light brownish gray (10YR 6/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; few very fine interstitial pores; neutral (pH 6.6); clear smooth boundary.

Bt1-9 to 18 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate coarse subangular blocky structure; hard, very friable, slightly sticky and slightly plastic; few thin clay films on pores; few very fine and fine roots; common fine interstitial and tubular and few very fine tubular pores; slightly acid (pH 6.5); abrupt smooth bound-

ary.

Bt2-18 to 40 inches; pinkish gray (7.5YR 6/2) extremely gravelly sandy clay loam, brown (7.5YR 3/4) moist; strong fine angular blocky structure; very hard, friable, sticky and plastic; many moderately thick clay films on ped faces and as bridges; common very fine and fine interstitial pores; 75 percent pebbles and 5 percent cobbles; slightly acid (pH 6.5).

R-40+ inches; highly weathered andesite.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; SW 1/4 SW 1/4 NW 1/4 Section 5, T. 43 N., R. 1 W.

Range in Characteristics: Etchen family soils are 40 to 60+ inches deep that formed in residuum and colluvium. The mean annual soil temperature is 38 to 48° F. The soil temperature at a depth of 20 inches exceeds 41° F. from May 1 to November 10 and exceeds 47° F. from June 10 to October 20. The soils are moist between the depths of 4 and 12 inches except during the period of July 1 to October 1.

The A horizons are dark grayish brown, brown, dark brown, grayish brown, or pale brown (10YR 4/2, 4/3, 5/2, 5/3, 6/2, 6/3) dry. Moist colors are dark brown, very dark brown or very dark grayish brown (7.5YR 3/2, 10YR 2/2, 3/2). It is loam or sandy loam. Reaction is medium acid to neutral.

The Bt horizons are pinkish gray, very pale brown, pale brown, light yellowish brown or yellowish brown (7.5YR 6/2; 10YR 7/4, 6/3, 6/4, 5/4) dry. Moist colors are brown, dark brown, or dark yellowish brown (7.5YR 3/4, 4/4; 10YR 3/3, 3/4, 4/3). It is very gravelly or extremely gravelly sandy clay loam, very gravelly clay loam or very gravelly sandy loam with 40 to 80 percent rock fragments. Reaction is slightly acid to neutral.

Use and Vegetation: These soils are used primarily for timber production and grazing. They also provide wildlife habitat and recreation. Native vegetation consists of ponderosa pine, western juniper, bitterbrush, mountain mahogany, bottlebrush squirreltail cheatgrass, bluegrass, Idaho fescue, rubber rabbitbrush Parry rabbitbrush and big sage.

GERLE FAMILY

The Gerle family consists of moderately deep or deep well drained residual soils formed from granitic parent material. The soils occur on mountain sideslopes, footslopes and ridges. Slopes range from 15 to 90 percent. The mean annual precipitation is 50 to 100 inches and the mean annual temperature is about 41° F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Coarse-loamy, mixed, frigid Typic Xerumbrepts.

Typical Pedon: Gerle family gravelly sandy loam - on a 62 percent west-facing slope at 5,300 feet elevation, under a cover of white fir, snowbrush and various other shrubs. (Colors are for dry soil unless otherwise stated).

O-1 1/2 to 0 inches; weakly matted white fir needles.

A1-0 to 5 inches; very dark grayish brown (10YR 3/2) gravelly fine sandy loam, very dark brown (10YR 2/2) moist; weak very fine granular structure; soft, very friable, slightly sticky, and nonplastic; abundant roots; slightly acid (pH 6.1); abrupt smooth boundary.

A2-5 to 11 inches; brown (10YR 5/3) gravelly fine sandy loam, dark brown (10YR 3/3) moist; weak fine sub-angular blocky structure; soft, very friable, slightly sticky and nonplastic; common roots; medium acid (pH 5.8); gradual smooth boundary.

Bw-11 to 20 inches; light yellowish brown (10YR 6/4) gravelly fine sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and nonplastic; common roots; strongly acid (pH 5.5); clear wavy boundary.

C-20 to 35 inches; light gray (2.5Y 7/2) very gravelly fine sand, moist colors are a mixture of the 2.5Y hue; massive; loose, loose, nonsticky and nonplastic; very few roots; strongly acid (pH 5.4); gradual smooth boundary.

Cr-35+ inches; soft, weathered diorite.

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; Thompson

Ridge, 6.5 miles north of Jackson Peak; NW 1/4 SW 1/4 Section 3, T. 18 N., R. 7 E.

Range in Characteristics: The soil is 20 to 40 inches deep to soft, weathered bedrock (gruss). The mean annual soil temperature is 35 to 47° F.; the mean January soil temperature is 30 to 35° F.; the mean July soil temperature is 43 to 55° F. The soil temperature exceeds 41° F. from April 15 to November 20, and is greater than 47° F. from May 20 to October 20. The soil between the depths of 12 and 35 inches is dry in all parts from August 1 to October 15, and moist in some or all parts the rest of the year. The soil is slightly to strongly acid. Base saturation is less than 50 percent throughout the soil.

The A horizon is brown, very dark grayish brown, dark brown, dark yellowish brown, dark grayish brown, grayish brown, or yellowish brown (7.5YR 5/2, 5/4; 10YR 3/2, 3/3, 4/2, 4/3, 4/4, 5/2, 5/3, 5/4). Moist colors are dark brown, black, very dark brown, or very dark grayish brown (7.5YR 3/2; 10YR 2/1, 2/2, 3/2, 3/3). It is loam, fine sandy loam, sandy loam, or loamy sand, and may be gravelly. There are less than 30 percent gravels. Reaction is strongly to slightly acid.

The Bw horizon is dark yellowish brown, brown, yellowish brown, pale brown, or light yellowish brown (10YR 4/3, 4/4, 5/3, 5/4, 6/3, 6/4). Moist colors are dark brown, dark yellowish brown, brown, or yellowish brown (7.5YR 3/2, 3/4; 10YR 3/3, 3/4, 4/3, 4/4, 5/3, 5/4). It is fine sandy loam or loamy sand and may be gravelly, with 5 to 30 percent gravels. Reaction is medium to slightly acid.

The C horizon is dark yellowish brown, brown, yellowish brown, pale brown, light yellowish brown, light brownish gray, light gray, or pale yellow (10YR 4/4, 5/3, 5/4, 5/3, 5/4; 2.5Y 6/2, 6/4, 7/2, 7/4). The texture is sandy loam, loamy sand or fine sand and may be gravelly or cobbly with 5 to 30 percent gravels and 5 to 20 percent cobbles. Reaction is medium to slightly acid.

The Cr horizon is soft, highly weathered granitic parent material, generally gruss.

Use and Vegetation: Used primarily for timber production. The native vegetation includes white fir, red fir, mountain hemlock, Douglas-fir, incense cedar, greenleaf manzanita, pinemat manzanita and bush chinquapin.

GILLIGAN FAMILY

The Gilligan family consists of deep, somewhat excessively drained residual soils formed from granitic parent material. These soils occur on steep to very steep mountain sideslopes. Slopes range from 30 to 90 percent. The mean annual precipitation is 30 to 70 inches and the mean annual temperature is about 51° F. Elevations are 1,500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Coarse-loamy, mixed, mesic Dystric Xerochrepts.

Typical Pedon: Gilligan family sandy loam - on a 75 percent northeast-facing slope at 3,360 feet elevation, under a mixed conifer and oak cover. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches; matted conifer needles and broad leaves.

A1-0 to 2 inches; grayish brown (2.5Y 5/2) sandy loam, dark grayish brown (2.5Y 4/2) moist; weak fine granular structure; very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; 5 percent pebbles; neutral (pH 6.8); clear wavy boundary.

A2-2 to 11 inches; light brownish gray (2.5Y 6/2) fine sandy loam, dark grayish brown (2.5Y 4/2) moist; weak fine subangular blocky structure; very friable, nonsticky and nonplastic; common very fine, fine and medium roots; 5 percent pebbles; slightly acid (pH 6.5); clear smooth boundary.

Bw1-11 to 22 inches; light gray (2.5Y 7/2) fine sandy loam, grayish brown (2.5Y 5/2) moist; weak fine subangular blocky structure; very friable, slightly sticky and nonplastic; common very fine, fine, medium and coarse roots; 5 percent pebbles; slightly acid (pH 6.3); gradual smooth boundary.

Bw2-22 to 29 inches; light gray (2.5Y 7/2) fine sandy loam, grayish brown (2.5Y 5/2) moist; massive; very friable, slightly sticky and nonplastic; common very fine roots; 5 percent pebbles; medium acid (pH 6.0); clear wavy boundary.

C-29 to 47 inches; white (2.5Y 8/2) fine sandy loam, light brownish gray (2.5Y 6/2) moist; massive; slightly hard, friable, slightly sticky and nonplastic; common very fine roots; 5 percent pebbles; medium acid (pH 6.0); clear irregular boundary.

Cr-47+ inches; paralithic contact to weathered granitic rock.

Type Location: Salmon River District, Klamath National Forest; Siskiyou County, California; 1.0 miles south of Summerville Site; SW 1/4 NE 1/4 Section 14, T. 37 N., R. 11 W.

Range in Characteristics: The soil is 40 to 60 inches deep to soft, weathered bedrock. The mean annual soil temperature is 47 to 59° F.; the mean January temperature is 35 to 45° F.; the mean July temperature is 55 to 73° F. The soil temperature exceeds 41° F. from February 20 to December 1, and exceeds 47° F. from March 20 to November 15. The soil between the depths of 8 and 25 inches is dry in all parts from July 15 to October 20, and moist in some or all parts the rest of the year. Soil reaction is strongly acid to neutral.

The A horizon is very dark grayish brown, dark grayish brown, grayish brown, brown, pale brown, or light brownish gray (10YR 3/2, 4/2, 4/3, 5/2, 5/3, 6/3; 2.5Y 5/2, 6/2). Moist colors are very dark brown, very dark grayish brown, dark brown or dark grayish brown (10YR 2/2, 3/2, 3/3; 2.5Y 4/2). It is loam, sandy loam or fine sandy loam and may be gravelly. Reaction is neutral to strongly acid.

The Bw horizon is brown, strong brown, yellowish brown, light brownish gray, pale brown, light yellowish brown, very pale brown, yellow or light gray (7.5YR 5/4, 5/6; 10YR 5/3, 5/4, 6/2, 6/3, 6/4, 7/4, 7/6; 2.5Y 6/2, 7/2). Moist colors are brown, strong brown, dark grayish brown, dark yellowish brown, yellowish brown, and grayish brown (7.5YR 4/2, 4/4, 5/4, 5/6; 10YR 4/2, 4/3, 4/4, 5/2, 5/3, 5/4; 2.5Y 4/2, 5/2). It is loam, sandy loam, or fine sandy loam, and may be gravelly, with less than 35 percent coarse fragments. Reaction is slightly to strongly acid.

The C horizon is light brown, reddish yellow, pale brown, light yellowish brown, very pale brown, light brownish gray, light gray or white (7.5YR 6/4, 6/6; 10YR 6/3, 6/4, 7/3, 7/4, 8/3, 8/4; 2.5Y 6/2, 7/2, 8/2). Moist colors are brown, strong brown, dark yellowish brown, yellowish brown, light yellowish brown, dark grayish brown, olive brown, grayish brown, light olive brown, or light brownish gray (7.5YR 4/4, 4/6, 5/4, 5/6; 10YR 4/3, 5/3, 5/4, 5/6, 6/4; 2.5Y 4/2, 4/4, 5/2, 5/4, 6/2, 6/4). It is loam, fine sandy loam, sandy loam or loamy sand. It may be gravelly or very gravelly. Clay content decreases by 2 to 3 percent from the Bw to the C horizon. Reaction is slightly to medium acid.

The Cr horizon is soft, highly weathered granitic bedrock

Use and Vegetation: Used primarily for timber production, watershed, wildlife habitat and range. The native vegetation includes incense cedar, white fir, Douglas-fir, sugar pine, ponderosa pine, whiteleaf manzanita,

deerbrush, madrone, black oak, canyon live oak, mountain dogwood, rose, currant, sword fern, California hazelnut, Pacific trillium, snowberry, various forbs and grasses.

GOLDRIDGE FAMILY

The Goldridge family consists of very deep, well drained residual soils formed from granitic rocks. These soils occur on moderately steep to steep mountain sideslopes and ridges. Slopes range from 15 to 50 percent. The mean annual precipitation is 45 to 65 inches and the mean annual temperature is about 50° F. Elevations are 2,000 to 4,500 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Fine-loamy, mixed, mesic Typic Haploxerults.

Typical Pedon: Goldridge family gravelly loam - on a 45 percent southwest-facing slope at 2,850 feet elevation, under a cover of Douglas-fir, tanoak, oak and madrone. (Colors are for dry soil unless otherwise stated).

O-1 to 0 inches; decomposing conifer needles and broadleaves.

A1-0 to 4 inches; light brown (7.5YR 6/4) gravelly loam, reddish brown (5YR 4/4) moist; weak very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common roots; 20 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

Bt1-4 to 14 inches; reddish yellow (7.5YR 7/6) clay loam, yellowish red (5YR 5/6) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and plastic; common roots; few thin clay films on ped faces; 2 percent pebbles; strongly acid (pH 5.5); gradual smooth boundary.

Bt2-14 to 30 inches; reddish yellow (5YR 6/8) clay loam, yellowish red (5YR 5/8) moist; moderate medium and coarse subangular blocky structure; very hard, firm, sticky and plastic; common roots; continuous moderately thick clay films on ped faces; 1 percent pebbles; strongly acid (pH 5.2); diffuse boundary.

Bt3-30 to 41 inches; reddish yellow (7.5YR 7/6) clay loam, reddish yellow (5YR 6/6) moist; weak coarse subangular blocky structure; hard, friable, slightly sticky and plastic; common roots; common thin clay films on ped faces; 3 percent pebbles; strongly acid (pH 5.3); diffuse boundary.

C1-41 to 60 inches; yellow (10YR 8/6) loam, brownish yellow (10YR 6/6) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few roots; 5 percent pebbles; strongly acid (pH 5.1); diffuse boundary.

C2-60 to 80+ inches; very pale brown (10YR 8/4) sandy loam, light yellowish brown (10YR 6/4) moist; massive; soft, very friable, slightly sticky and nonplastic; very few roots; 7 percent pebbles; strongly acid (pH 5.1).

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; Dillon/Clear Creek area; NW 1/4 NW 1/4 Section 19 (approximate location; area has not been surveyed), T. 14 N., R. 6 E.

Range in Characteristics: The soil is 60+ inches deep to bedrock. The mean annual soil temperature is 47 to 59° F.; the mean January soil temperature is 35 to 45° F.; The mean July soil temperature is 55 to 70° F. The soil temperature exceeds 41° F. from March 20 to November 15. The soil between the depths of 7 and 19 inches is dry in all parts from July 15 to October 20, and moist in some or all parts the rest of the year. The soil is slightly to very strongly acid. Base saturation is less than 35 percent 50 inches below the upper boundary of the argillic horizon.

The A horizon is reddish yellow, brown, or light brown (7.5YR 5/4, 6/4, 6/6). Moist colors are dark brown, reddish brown, or brown (2.5YR 3/4; 5YR 4/3, 4/4; 7.5YR 4/4). It is loam or clay loam, and may be gravelly, with up to 35 percent gravel. Reaction is strongly to medium acid.

The Bt horizon is light reddish yellow or reddish yellow (5YR 6/4, 6/8; 7.5YR 7/6). Moist colors are reddish brown, reddish yellow or yellowish red (5YR 4/4, 5/6, 5/8, 6/6, 6/8). It is sandy clay loam or clay loam with 1 to 10 percent gravel. Reaction is very strongly to slightly acid.

The C horizon is very pale brown, or yellow (10YR 8/4, 8/6). Moist colors are strong brown, reddish yellow, brownish yellow, or light yellowish brown, (7.5YR 5/6, 6/6; 10YR 6/4, 6/6). It is sandy loam, loam, or sandy clay loam, with 5 to 15 percent gravel. Reaction is very strongly to slightly acid.

The top of the R horizon is generally greater than 80 inches deep.

Use and Vegetation: Used primarily for timber production. The native vegetation includes Douglas-fir, tanoak, madrone, dogwood, deerbrush, Oregon grape and chinquapin.

GOLDRIDGE FAMILY, GRAVELLY

The Goldridge family, gravelly, consists of deep and very deep well drained soils that formed in colluvium and residuum from metamorphic rocks. These soils occur on mountain sideslopes, footslopes, landslide deposits and broad ridges. Slopes range from 30 to 50 percent. The mean annual precipitation is 50 to 80 inches and the mean annual temperature is about 52° F. Elevations are 600 to 4,500 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Fine-loamy, mixed, mesic Typic Haploxerults.

Typical Pedon: Goldridge family, gravelly, very gravelly loam - on a 50 percent southwest-facing slope at 2,850 feet elevation under Douglas-fir, hardwoods and shrubs. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches; fresh and partially decomposed needles, twigs and leaves.

A1-0 to 2 inches; strong brown (7.5YR 5/6) very gravelly loam, dark brown (7.5YR 3/2) moist; strong very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common roots; 55 percent pebbles; slightly acid (pH 6.4); abrupt smooth boundary.

A2-2 to 4 inches; reddish yellow (7.5YR 6/6) very gravelly loam, brown or dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common roots; 55 percent pebbles; slightly acid (pH 6.4); clear smooth boundary.

BA-4 to 10 inches; reddish yellow (7.5YR 6/6) gravelly loam, yellowish red (5YR 5/6) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; few thin clay films on ped faces; common roots; 30 to 35 percent pebbles; medium acid (pH 6.0); gradual smooth boundary.

Bt1-10 to 19 inches; reddish yellow (5YR 6/6) gravelly clay loam, yellowish red (5YR 5/6) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common thin clay films on ped faces and many moderately thick clay films in pores; common roots; 25 percent pebbles; medium acid

(pH 5.8); diffuse boundary.

Bt2-19 to 28 inches; reddish yellow (5YR 6/6) very gravelly clay loam, yellowish red (5YR 5/6) moist; weak coarse subangular blocky structure; slightly hard, friable, sticky and plastic; few thin clay films on ped faces and common thin clay films in pores; few roots; 40 percent pebbles; medium acid (pH 6.0) gradual smooth boundary.

2BC-28 to 60+ inches; reddish yellow (5YR 6/8) very gravelly clay loam, yellowish red (5YR 5/6) moist; massive; hard, firm, sticky and plastic; very few roots; 40 percent pebbles; slightly acid (pH 6.3).

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County California; SE 1/4 NW 1/4 Section 1, T. 15 N., R. 6 E.

Range in Characteristics: Depth to a lithic contact is 40 to 60+ inches. Mean annual soil temperature is 47 to 58° F.; mean January soil temperature is 34 to 46° F.; mean July soil temperature is 57 to 76° F. The soil temperature exceeds 41° F. from February 10 to December 10 and exceeds 47° F. from March 1 to November 20. The soil between the depths of 8 to 20 inches is dry from July 15 to October 20 in most years and moist in some or all parts the rest of the year. It has a base saturation of less than 35 percent 50 inches below the upper boundary of the argillic horizon.

The A horizon is strong brown or reddish yellow (7.5YR 5/6, 6/6). Moist colors are dark brown or brown (7.5YR 3/2, 4/4). It is very gravelly or extremely gravelly loam with 50 to 70 percent gravel. Reaction is neutral or slightly acid.

The B horizon is reddish yellow (7.5YR 6/6; 5YR 6/6, 6/8). Moist colors are yellowish red or red (5YR 5/6; 2.5YR 5/6). It is gravelly or very gravelly loam or clay loam with 20 to 50 percent gravel. Reaction is medium or slightly acid.

Use and Vegetation: Used mainly as watershed, wildlife habitat, range and timber production. Native vegetation is Douglas-fir, sugar pine, California black oak, canyon live oak, big leaf maple, tanoak, madrone, poison oak, sword fern, bracken fern, deerbrush, bunchberry, thimbleberry and iris.

GUEMES FAMILY

The Guemes family consists of moderately deep, well drained residual soils formed from serpentinitic rocks. These soils occur on mountain sideslopes. Slopes range from 30 to 90 percent. The mean annual precipitation is 45 to 70 inches and the mean annual temperature is about 51° F. Elevations are 1,500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, serpentinitic, mesic Typic Haploxeralfs.

Typical Pedon: Guemes family very gravelly loam - on a 55 percent northeast-facing slope at 3,450 feet elevation, under a mixed-conifer, huckleberry oak cover. (Colors are for dry soil unless otherwise stated).

O-1 to 0 inches; weakly matted conifer needles.

A1-0 to 2 inches; light brownish gray (10YR 6/2) very gravelly loam, dark grayish brown (10YR 4/2) moist; weak very fine and fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many roots; 70 percent pebbles; slightly acid (pH 6.1); abrupt smooth boundary.

A2-2 to 7 inches; very pale brown (10YR 7/3) very gravelly loam, brown (10YR 5/3) moist; moderate very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common roots; 50 percent pebbles; slightly acid (pH 6.5) clear smooth boundary.

Bt1-7 to 12 inches; very pale brown (10YR 7/4) gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common roots; few thin clay films on ped faces; 25 percent pebbles; neutral (pH 6.6); gradual smooth boundary.

Bt2-12 to 28 inches; reddish yellow (7.5YR 6/6) gravelly clay loam, strong brown (7.5YR 5/6) moist; moderate medium subangular blocky structure; very hard, firm, very sticky and plastic; common roots; com-

mon thin clay films on ped faces; 15 percent pebbles; slightly acid (pH 6.4); abrupt irregular boundary.

R-28+ inches; hard serpentinitic bedrock.

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; 5 miles northwest of Happy Camp; NE 1/4 Section 19, T. 17 N., R. 7 E.

Range in Characteristics: The soil is 20 to 40 inches deep to hard bedrock. The mean annual soil temperature is 47 to 59° F.; the mean January soil temperature is 35 to 45° F.; the mean July soil temperature is 55 to 73° F. The soil temperature exceeds 41° F. from February 20 to December 1, and is greater than 47° F. from March 20 to November 15. The soil between the depths of 9 and 27 inches is dry in all parts from July 15 to October 20, and moist in some or all parts the rest of the year. The soil is slightly acid to neutral. Base saturation is less than 75 percent in some part of the upper 30 inches of the argillic or to a lithic contact.

The A horizon is light grayish brown, yellowish brown, or very pale brown (10YR 5/4, 6/2, 7/3). Moist colors are dark yellowish brown, dark grayish brown or dark brown (10YR 3/3, 4/2, 4/4, 5/3). It is gravelly, very gravelly or extremely gravelly sandy loam or loam, with 20 to 70 percent gravel. Reaction is slightly acid.

The Bt horizon is reddish yellow, brown, or very pale brown (7.5YR 6/6; 10YR 4/3, 5/4, 7/4). Moist colors are strong brown, dark yellowish brown, or yellowish brown (7.5YR 5/6; 10YR 4/4, 5/4). It is gravelly or very gravelly loam or clay loam, with 15 to 50 percent gravel and 15 to 25 percent cobbles. Reaction is slightly acid to neutral.

The R horizon is hard, fractured serpentinite.

Use and Vegetation: Used primarily for watershed, range, timber production and wildlife habitat. The native vegetation includes Douglas-fir, sugar pine, Jeffrey pine, incense cedar, knobcone pine, huckleberry oak, greenleaf manzanita, snowbrush and beargrass.

HADES FAMILY

The Hades family consists of moderately deep and deep, well drained soils that formed in material weathered from basaltic or andesitic volcanic rocks. These soils occur on volcanic mountain sideslopes. Slopes range from 15 to 50 percent. The annual precipitation is 12 to 15 inches and the mean annual temperature is about 42° F. Elevations are 4,400 to 6,400 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Fine-loamy, mixed, frigid Pachic Argixerolls.

Typical Pedon: Hades family gravelly loam - on a 25 percent west-facing slope at 5,440 feet elevation, under rabbitbrush, mountain mahogany, bitterbrush, ponderosa pine, Idaho fescue, cheatgrass, brome and bluegrass. (Colors are for dry soils unless otherwise stated)

A1-0 to 2 inches; grayish brown (10YR 5/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine platy structure; soft, very friable, non-sticky and nonplastic; few very fine roots; common very fine interstitial pores; 20 percent pebbles and 5 percent cobbles; slightly acid (pH 6.5); clear smooth boundary.

A2-2 to 5 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; weak very fine and fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine roots; few very fine and fine interstitial pores; 10 percent pebbles and 2 percent cobbles; neutral (pH 7.0); clear smooth boundary.

Bt1-5 to 21 inches; dark brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few thin clay films on ped faces; few very fine, fine and medium roots; few very fine tubular pores; 5 percent pebbles and 2 percent cobbles; neutral (pH 7.0); clear smooth boundary.

Bt2-21 to 48 inches; dark brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; moderate

medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; moderate thin and few moderately thick clay films on ped faces and in pores; few very fine and medium roots; few very fine and fine tubular pores; 5 percent pebbles, 5 percent cobbles and 2 percent stones; neutral (pH 7.0); abrupt smooth boundary.

R-48+ inches; hard moderately fractured basaltic rock.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; about 4.5 miles northeast of Bray, California; NE corner NW 1/4 SW 1/4 Section 25, T. 45 N., R. 1 W.

Range in Characteristics: Depth to a lithic contact is 20 to 60 inches. Mean annual soil temperature is 38 to 46° F.; mean January soil temperature is 33 to 36° F.; mean July soil temperature is 47 to 58° F. The soil temperature exceeds 41° F. from April 10 to November 20 and exceeds 47° F. from May 15 to October 25. The soil between a depth of 8 and 25 inches is dry in all parts from August 1 to October 15 in most years and is moist in some or all parts the rest of the year. The mollic epipedon is greater than 20 inches thick. Base saturation is greater than 75 percent throughout the upper 30 inches of the soil and greater than 50 percent below.

The A horizon is dark grayish brown, brown, or grayish brown (10YR 4/2, 4/3, 5/2, 5/3). Moist colors are very dark brown, very dark grayish brown or dark brown (10YR 2/2, 3/2, 3/3). It is loam or gravelly loam with 13 to 18 percent clay. Reaction is slightly acid to neutral.

The Bt horizon is brown or dark brown (10YR 4/3, 5/3). Moist colors are very dark grayish brown or dark brown (10YR 3/2, 3/3). It is loam or clay loam with 18 to 35 percent clay and 5 percent gravel and 5 percent cobbles. Reaction is neutral.

Use and Vegetation: Used mainly as rangeland and wildlife habitat with some timber production. Native vegetation includes greenleaf manzanita, bitterbrush, mountain mahogany, rabbitbrush, ponderosa pine, juniper, incense cedar, cheatgrass, bottlebrush squirreltail, blue bunch wheatgrass, stipa, poas and fescue.

HELVETIA FAMILY

The Helvetia family consists of moderately deep, well drained residual soils that formed in materials weathered from basic igneous and metamorphic rocks. These soils occur on mountain sideslopes, broad ridges and benches. Slopes range from 15 to 70 percent. The mean annual precipitation is 25 to 35 inches and the mean annual temperature is about 52° F. Elevations are 3,500 to 4,800 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Fine, mixed, mesic Ultic Argixerolls.

Typical Pedon: Helvetia family gravelly clay loam - on a 35 percent south-facing slope at 4,200 feet elevation, under a cover of ponderosa pine, incense cedar, Douglas-fir, canyon live oak and black oak. (Colors are for dry soil unless otherwise stated).

A1-0 to 6 inches; brown (10YR 4/3) gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; common very fine interstitial pores; 25 percent pebbles; neutral (pH 7.0); clear wavy boundary.

Bt1-6 to 17 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few thin clay films in pores; common very fine and fine roots; few very fine tubular pores; 20 percent pebbles; slightly acid (pH 6.5); clear wavy boundary.

Bt2-17 to 23 inches; pale brown (10YR 6/3) gravelly silty clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common thin and moderately thick clay films on ped faces and in pores; common fine and medium roots; common very fine and few fine tubular pores; 30 percent pebbles; slightly acid (pH 6.5); clear smooth boundary.

Bt3-23 to 35 inches; pale brown (10YR 6/3) gravelly silty clay, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky struc-

ture; hard, firm, sticky and plastic; common moderately thick and few thick clay films on ped faces and in pores; few very fine roots; common very fine and fine tubular pores; 30 percent pebbles; slightly acid (pH 6.5); clear wavy boundary.

Cr-35+ inches; soft, highly weathered schist.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; Wildcat Creek SW 1/4 NE 1/4 Section 22, T. 40 N., R. 9 W.

Range in Characteristics: The soil is 20 to 40 inches deep to a lithic or paralithic contact. Mean annual soil temperature is 47 to 59° F.; mean January soil temperature is 36 to 45° F.; mean July soil temperature is 55 to 73° F. The soil temperature exceeds 41° F. from February 20 to December 1, and exceeds 47° F. from March 20 to November 15. The soil between a depth of 7 and 20 inches is dry in all parts from July 15 to October 20 in most years, and is moist in some or all parts the rest of the year. The mollic epipedon is 10 to 19 inches thick. The base saturation is assumed to be less than 75 percent throughout the upper 30 inches of soil.

The A horizon is brown, dark brown, or grayish brown (10YR 4/2, 4/3, 5/2, 5/3). Moist colors are dark brown, or very dark grayish brown (7.5YR 3/2; 10YR 3/2, 3/3). It is a loam, gravelly loam, clay loam, or gravelly clay loam. There are 10 to 25 percent gravels present. Reaction is medium acid to neutral.

The Bt horizon is olive brown, dark grayish brown, yellowish brown, or pale brown (2.5Y 4/2, 4/4; 10YR 5/4, 6/3). Moist colors are dark brown, brown, dark yellowish brown, or olive brown (10YR 3/3, 4/3, 4/4; 2.5Y 4/4). It is gravelly clay loam, gravelly silty clay loam, or gravelly silty clay, with 20 to 30 percent gravel. Reaction is medium acid to neutral.

Use and Vegetation: Used primarily for timber production and rangeland. Native vegetation includes ponderosa pine, incense cedar, Douglas-fir, canyon live oak, black oak, lupine, vetch and stipa.

HOLLAND FAMILY

The Holland family consists of deep or very deep, well drained soils that formed in alluvium or residuum from granitic, ultramafic or metamorphic rocks. These soils occur on mountain sideslopes, river terraces and benches. Slopes range from 30 to 50 percent. Mean annual precipitation is 30 to 90 inches and the mean annual air temperature is about 51°F. Elevations are 1,200 to 5,200 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Fine-loamy, mixed, mesic Ultic Haploxeralfs.

Typical Pedon: Holland family very gravelly loam - on a 33 percent southeast-facing slope at 1,500 feet elevation under a mixed conifer cover at 1,500 feet elevation. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches; fresh and partially decomposed conifer needles and twigs.

A1-0 to 1 1/2 inches; pink (7.5YR 7/4) very gravelly loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common roots; 36 percent pebbles; medium acid (pH 5.7); clear smooth boundary.

AB-1 1/2 to 8 inches; reddish yellow (7.5YR 7/6) gravelly loam, dark brown (7.5YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; common roots; 20 percent pebbles; strongly acid (pH 5.9); gradual smooth boundary.

Bt1-8 to 22 inches; reddish yellow (5YR 6/6) gravelly clay loam, yellowish red (5YR 4/6) moist; moderate medium subangular blocky structure; hard, firm, sticky, and plastic; common roots; 20 percent pebbles; strongly acid (pH 5.3); gradual smooth boundary.

Bt2-22 to 41 inches; reddish yellow (5YR 6/8) gravelly heavy clay loam, yellowish red (5YR 5/6) moist; moderate medium subangular blocky structure; very hard, firm, sticky, and plastic; many moderately thick clay films on ped faces; few roots; 25 percent pebbles; strongly acid (pH 5.3); gradual smooth boundary.

Bt3-41 to 60+ inches; reddish yellow (7.5YR 6/6) very

gravelly clay loam, strong brown (7.5YR 5/6) moist; weak coarse subangular blocky structure; hard, firm, sticky and plastic; few roots; 25 percent pebbles; strongly acid (pH 5.3).

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; about 6 miles northeast of Happy Camp; NE 1/4 NE 1/4 Section 20, T. 17 N., R. 8 E.

Range in Characteristics: Holland family soils are 40 to 60+ inches deep. The mean annual soil temperature is 47 to 59°F. The mean January soil temperature is 33 to 42°F. and the mean July soil temperature is 62 to 73°F. The soil temperature at a depth of 20 inches exceeds 41°F. from March 31 through mid-December and exceeds 47°F. from mid-March through November 30. The soil is dry between the depths of 4 and 12 inches from mid-July until mid-October in most years and is moist in some or all parts the remainder of the year.

The A horizons are brown, pink, reddish yellow, pale brown, grayish brown, or light brownish gray (7.5YR 5/4, 7/4, 7/6; 10YR 5/2, 5/3, 6/3,) dry, dark brown, brown, reddish brown, dark grayish brown, or very dark grayish brown (10YR 3/3, 4/3; 7.5YR 3/2, 4/4; 5YR 4/4; 2.5YR 4/5; 2.5Y 3/2, 4/2) moist. They are gravelly or very gravelly loams or sandy loams with 10 to 50 percent gravel by volume. Reaction is slightly to strongly acid.

The Bt horizons are light red, red, yellowish red, reddish yellow, brown or strong brown (2.5YR 6/6, 4/6; 5YR 4/6, 5/6, 6/6, 6/8; 7.5YR 5/4, 5/6, 6/6, 7/6) dry, brown, strong brown, reddish brown, yellowish red (7.5YR 4/4, 4/6, 5/6; 2.5YR 4/4; 5YR 4/6, 5/6) moist. They are sandy clay loams, or gravelly or very gravelly clay loams in the Bt horizons. B horizons above the Bt horizons may be loams or sandy loams. Common to many thin or moderately thick clay films are on ped faces, lining pores and as bridges. Coarse fragments in the control section are less than 35 percent by volume. Reaction is slightly to strongly acid.

Use and Vegetation: These soils are primarily used for timber. They also provide wildlife habitat and recreation. Native vegetation consists of Douglas-fir, ponderosa pine, sugar pine, incense cedar, black oak, white oak, madrone, deerbrush, poison oak, squaw carpet, currant, Oregon grape, bracken fern, longleaf mahonia, snowberry, rose, modesty flower, whiteleaf manzanita, other forbs and grasses.

ILLER FAMILY

The Iller family consists of very deep, well drained soils formed in volcanic ash deposits over colluvium and material weathered from tuff, tuff breccias or extrusive igneous bedrock. These soils occur on mountain sideslopes and volcanic uplands. Slopes range from 5 to 30 percent. The mean annual precipitation is 20 to 40 inches and the mean annual temperature is about 42°F. Elevations are 5,500 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Medial over loamy-skeletal, mixed, frigid Andic Xerumbrepts.

Typical Pedon: Iller family sandy loam - on a 16 percent southwest-facing slope at 6,000 feet elevation, under a mixed conifer forest. (Colors are for dry soil unless otherwise noted).

O-1 to 0 inches; new and partially decomposed needles, twigs and leaves.

A1-0 to 4 inches; grayish brown (10YR 5/2) sandy loam, dark brown (10YR 3/2) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; common very fine interstitial pores; 5 percent pebbles; slightly acid (pH 6.5); clear wavy boundary.

A2-4 to 12 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; massive; soft, very friable, nonsticky and nonplastic; common medium and few fine and very fine roots; few very fine interstitial pores; 13 percent pebbles; slightly acid (pH 6.5); gradual wavy boundary.

Bw1-12 to 23 inches; yellowish brown (10YR 5/4) sandy loam, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine, fine medium and coarse roots; few very fine interstitial pores; 15 percent pebbles; slightly acid (pH 6.5); gradual smooth boundary.

Bw2-23 to 27 inches; yellowish brown (10YR 5/4) gravelly sandy loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; few very fine interstitial pores; few thin clay films as bridges; 20 percent pebbles; neutral (pH 6.8); clear wavy boundary.

2Bwb-27 to 60+ inches; yellowish brown (10YR 5/4) extremely cobbly loam, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, slightly sticky and slightly plastic; 15 percent pebbles and 55 percent cobbles and stones; few very fine roots; few very fine interstitial pores; 15 percent pebbles and 55 percent cobbles; slightly acid (pH 6.5).

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; SW 1/4 SW 1/4 SW 1/4 Section 1, T. 44 N., R. 3 W.

Range in Characteristics: The volcanic ash mantle is 20 to 30 inches thick. Total soil depth is greater than 60 inches. The mean annual soil temperature is 42 to 47°F. The soil temperature exceeds 41°F. from June 1 to October 20. The soil is dry in the 8 to 24 inch control section from mid-July to mid-October and is moist in some or all parts the rest of the year.

The A horizon is reddish brown, brown, grayish brown or yellowish brown (5YR 5/3; 7.5YR 5/2, 5/4; 10YR 5/2, 5/3, 5/4). Moist colors are dark reddish brown, dark brown or very dark grayish brown (5YR 3/3; 7.5YR 3/2; 10YR 3/2, 3/3). It is sandy loam or gravelly loam. Reaction is medium acid to neutral.

The Bw horizon is brown, yellowish brown, light brownish gray, pale brown, reddish brown or light yellowish brown (5YR 5/4; 7.5YR 5/4; 10YR 5/4, 6/2, 6/3, 6/4). Moist colors are reddish brown, dark brown, dark grayish brown or brown (5YR 4/4; 7.5YR 3/4; 10YR 4/2, 4/3). It is sandy loam or gravelly sandy loam. Reaction is medium acid to neutral.

The 2Bwb horizon is reddish brown, pinkish gray, yellowish brown or light yellowish brown (5YR 5/3, 5/4; 7.5YR 6/2; 10YR 5/4, 6/4). Moist colors are dark reddish brown, reddish brown, dark grayish brown or brown (5YR 3/3, 4/4; 10YR 4/2, 4/3). It is very gravelly loam, very gravelly sandy loam, very cobbly loam or extremely cobbly loam. Reaction is medium to slightly acid.

Use and Vegetation: Used mainly for timber. Native vegetation is white fir, red fir, ponderosa pine, Douglas-fir at lower elevations and incense cedar. Shrubs are wild currant, greenleaf manzanita, squaw carpet, snowbrush and chinquapin.

INVILLE FAMILY

The Inville family consists of moderately deep and deep, well drained soils that formed in material weathered from metamorphic and igneous rocks. Inville family soils occur on mountain sideslopes, ridges and volcanic uplands. Slopes range from 2 to 50 percent. The mean annual precipitation is 20 to 65 inches and the mean annual temperature is about 42° F. Elevations are 4,900 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid Ultic Haploxeralfs.

Typical Pedon: Inville family gravelly loam - on an 18 percent northeast-facing slope at 5,040 feet elevation, under a mixed conifer forest. (Colors are for dry soil unless otherwise stated.)

A1-0 to 2 inches; brown (10YR 4/3) gravelly loam, dark brown (7.5YR 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine roots; 18 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

A2-2 to 7 inches; brown (7.5YR 5/4) loam, dark brown (7.5YR 3/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium roots; 8 percent pebbles; neutral (pH 6.7); gradual smooth boundary.

Bt1-7 to 13 inches; reddish brown (5YR 5/3) gravelly loam, reddish brown (5YR 4/4) moist; moderate fine granular structure; soft, very friable, nonsticky and slightly plastic; few very fine and fine roots; 15 percent pebbles and 5 percent cobbles; slightly acid (pH 6.3); clear smooth boundary.

Bt2-13 to 23 inches; reddish brown (5YR 5/3) very cobbly loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; many moderately thick clay films on ped faces and in pores; few very fine, fine, and medium roots; 10 percent pebbles and 25 percent cobbles; strongly acid (pH 5.5); clear wavy boundary.

Bt3-23 to 30 inches; reddish brown (5YR 5/3) extremely gravelly loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, firm, slightly sticky and

slightly plastic; common moderately thick clay films on ped faces, in pores, and bridging; few fine and medium roots; 55 percent pebbles and 10 percent cobbles; strongly acid (pH 5.5); gradual wavy boundary.

Cr-30+ inches; highly weathered igneous rock.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; 6 miles west of Macdoel, 1/2 mile east of Juanita Lake Rd., 1/2 mile northeast of Juanita Lake; SW 1/4 SE 1/4 Section 17, T. 46 N., R. 2 W.

Range in Characteristics: Depth to a lithic or paralithic contact is 20 to 60 inches. Mean annual soil temperature is 39 to 46°F.; mean January soil temperature is 30 to 36° F.; and mean July soil temperature is 47 to 55° F. The soil temperature exceeds 41°F. from April 10 to November 20 and exceeds 47° F. from May 15 to October 25. The soil between a depth of 7 and 22 inches is dry in all parts from August 1 to October 15 in most years and is moist in some or all parts the rest of the year.

The A horizon is dark grayish brown, yellowish brown, pale brown, and brown (10YR 4/2, 4/3, 5/3, 5/4, 6/3; 7.5YR 5/4). Moist colors are black, very dark brown, dark yellowish brown, brown, and dark brown (10YR 2/1, 2/2, 3/3, 3/4, 4/3; 7.5YR 3/2, 3/4). It is loam, gravelly loam, cobbly loam, stony sandy loam or very gravelly sandy loam with 10 to 20 percent clay and 6 to 70 percent gravel, cobbles and stones. Reaction is medium acid to mildly alkaline.

The Bt horizon is brown, yellowish brown, pale brown, light yellowish brown, very pale brown, light brown, or reddish brown (10YR 5/3, 5/4, 6/3, 6/4, 7/3, 7/4; 7.5YR 5/4, 6/4; 5YR 5/3). Moist colors are very dark grayish brown, dark brown, dark yellowish brown, yellowish brown, strong brown, dark reddish brown, or reddish brown (10YR 4/3, 4/4, 5/4, 5/6; 7.5YR 3/4, 4/4, 4/6; 5YR 3/4, 4/4). It is gravelly to extremely gravelly loam or very cobbly to extremely cobbly loam with 15 to 30 percent clay and 20 to 75 percent gravel, cobbles, and stones. The weighted average of the family control section is 18 to 30 percent clay and greater than 35 percent gravel, cobbles, and stones. Reaction is strongly acid to mildly alkaline.

Use and Vegetation: Used primarily for timber pro-

duction, wildlife habitat and watershed. Native vegetation includes Douglas-fir, ponderosa pine, red fir, knobcone pine, white fir, incense cedar, sugar pine, greenleaf manzanita, squaw carpet, pinemat manzanita, chin-

quapin, wildrose, gooseberry, snowberry, rabbitbrush, currant (ribies), snowbrush, bitterbrush, huckleberry oak, fescue, brome, bottlebrush squirreltail and carex.

JAYAR FAMILY

The Jayar family consists of moderately deep and deep, well drained soils formed in residuum or colluvium from metamorphic and granitic rocks. These soils occur on mountain sideslopes and colluvial slopes. Slopes range from 30 to 70 percent. The mean annual precipitation is 30 to 100 inches and the mean annual temperature is 43°F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid Dystric Xerochrepts.

Typical Pedon: Jayar family very gravelly loam - on a 30 percent northwest-facing slope at 5,550 feet elevation, under a red fir, mountain hemlock cover. (Colors are for dry soil unless otherwise noted.)

O-2 to 0 inches; matted conifer needles.

A1-0 to 2 inches; brown (10YR 4/3) very gravelly loam, dark brown (7.5YR 3/2) moist; strong very fine and fine granular structure; soft, very friable, slightly sticky and nonplastic; 60 percent pebbles; slightly acid (pH 6.5); clear smooth boundary.

Bw1-2 to 10 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (7.5YR 4/3) moist; moderate very fine and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; 40 percent pebbles; slightly acid (pH 6.3); clear wavy boundary.

Bw2-10 to 24 inches; very pale brown (10YR 7/4) very gravelly loam, yellowish brown (10YR 5/4) moist; weak very fine and fine subangular blocky structure; soft, friable, slightly sticky and nonplastic; 40 percent pebbles; slightly acid (pH 6.3); gradual smooth boundary.

C-24 to 34 inches; pale yellow (2.5Y 8/3) very gravelly sandy loam, light yellowish brown (2.5Y 6/3) moist; massive; soft, friable, slightly sticky and nonplastic; 60 percent pebbles; slightly acid (pH 6.4); abrupt irregular boundary.

R-34+ inches; fractured hard metamorphic bedrock.

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; about 1.9 miles east of Bare Mtn., near the Munson Mine on Thompson Ridge; SW 1/4 SE 1/4 Section 33, T. 12 N., R. 7 E., Humboldt Base Meridian.

Range in Characteristics: The Jayar family soils are 20 to 60 inches deep to fractured metamorphic or granitic bedrock. The mean annual soil temperature is about 37 to 47°F. The mean January soil temperature is 30 to 39°F.; the mean July soil temperature is 41 to 62°F. The soil temperature at a depth of 21 inches exceeds 41°F. from April 1 until November 1 and exceeds 47°F. from April 15 to November 1. The soil is dry between the depths of 4 and 12 inches from mid-July until mid-October in most years and is moist in some or all parts the remainder of the year.

The A horizon is brown or pale brown (10YR 4/3, 6/3) dry. Moist colors are very dark brown, dark brown, or yellowish brown (7.5YR 3/2; 10YR 3/2, 5/4). It is a gravelly loam, very gravelly loam, or very gravelly sandy loam with 30 to 60 percent coarse fragments. Reaction is slightly acid.

The Bw horizon is very pale brown, pale brown, or yellowish brown (10YR 5/4, 6/3, 7/3, 7/4) dry. Moist colors are brown, dark brown, yellowish brown, or brownish yellow (10YR 4/3, 5/4, 6/6; 7.5YR 4/3). It is gravelly loam, very gravelly loam, or very gravelly sandy loam with 30 to 45 percent coarse fragments. Reaction is slightly to strongly acid.

The C horizon is very pale brown or pale yellow (10YR 7/3, 7/4; 2.5Y 8/3) dry, brown, very pale brown, or light yellowish brown (10YR 5/3, 7/5; 2.5Y 6/3) moist. It is a very gravelly loam or very gravelly sandy loam with 40 to 60 percent coarse fragments. Reaction is slightly to strongly acid.

Use and Vegetation: Used for commercial timber production, watershed, and wildlife habitat. Native vegetation is forests of red fir, white fir, ponderosa pine, Douglas-fir, and mountain hemlock. Shrubs include snowbrush, sadler oak, pinemat manzanita, green-leaf manzanita, snowberry, currant, strawberry shinleaf, princes pine and lupine.

KANG FAMILY

The Kang family consists of moderately deep, well drained, soils formed in residuum or colluvium from serpentinite. These soils occur on broad ridges, sideslopes and colluvial footslopes. Slopes range from 9 to 50 percent. The mean annual precipitation is 20 to 40 inches and the mean annual temperature is 50° F. Elevations are 2,000 to 4,800 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Clayey-skeletal, serpentinitic, mesic Pachic Argixerolls.

Typical Pedon: Kang family gravelly sandy clay loam - on a 42 percent southeast-facing slope at 4,050 feet elevation, under a cover of Jeffrey pine, incense cedar, wedgeleaf ceanothus, California fescue and other perennial grasses. (Colors are for dry soil unless otherwise stated).

O-2 to 0 inches, fresh conifer needles becoming more decomposed with depth.

A-0 to 3 inches; very dark grayish brown (10YR 3/2) gravelly sandy clay loam, very dark gray (10YR 3/1) moist; weak fine granular structure; soft, very friable, sticky and slightly plastic; common very fine and few fine roots; common very fine and fine interstitial pores; 25 percent pebbles and 8 percent cobbles and stones; neutral (pH 7.0); abrupt wavy boundary.

Bt1-3 to 6 inches; very dark grayish brown (10YR 3/2) gravelly clay, very dark gray (10YR 3/1) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; few thin and moderately thick clay films lining pores and on faces of peds; 15 percent pebbles and 8 percent cobbles and stones; neutral (pH 7.2); abrupt wavy boundary.

Bt2-6 to 12 inches; very dark grayish brown (10YR 3/2) cobbly clay, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few very fine, fine and medium roots; common very fine and fine tubular pores; few thin and moderately thick clay films lining pores and on faces of peds; 15 percent pebbles, 10 percent cobbles and 10 percent stones; neutral (pH 7.2); clear wavy boundary.

Bt3-12 to 22 inches; dark brown (10YR 3/3) stony clay, dark brown (10YR 3/3) moist; moderate coarse subangular blocky structure; very hard, firm, sticky

and plastic; few very fine and fine and common medium and coarse roots; common very fine and fine tubular pores; many moderately thick and thick clay films lining pores, on faces of peds, and as bridges; 15 percent pebbles, 10 percent cobbles and 20 percent stones; mildly alkaline (pH 7.4); clear wavy boundary.

Bt4-22 to 27 inches; dark brown (7.5YR 4/4) very stony clay, dark brown (7.5YR 4/4) moist; moderate coarse subangular blocky structure; very hard, firm, sticky and plastic; few very fine and fine and common medium roots; few very fine and fine tubular pores; many thick clay films lining pores, on ped faces, and as bridges; 35 percent pebbles, 10 percent cobbles and 30 percent stones; mildly alkaline (pH 7.4); abrupt wavy boundary.

R-27+ inches; hard serpentinite bedrock.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; about 7 miles northeast of Callahan, 1 mile south of Lovers Leap, and 100 yards north of Kangaroo Creek; NE 1/4 NE 1/4 Section 8, T. 40 N., R. 7 W., Mount Diablo Meridian.

Range in Characteristics: Kang family soils are 20 to 40 inches deep. The mean annual soil temperature is 47° to 57° F. The mean January soil temperature is 36° to 41° F.; the mean July soil temperature is 57° to 71° F. The soil temperature at a depth of 20 inches exceeds 41° F. from February 20 through December 5 and exceeds 47° F. from March 20 through November 15. The soil is dry between the depths of 4 and 12 inches from mid-July until mid-October in most years and is moist in some or all parts the remainder of the year.

The A horizon is very dark grayish brown, dark grayish brown, grayish brown, or dark brown (10YR 3/2, 4/2, 5/2; 7.5YR 4/4). Moist colors are very dark brown, very dark gray, very dark grayish brown, or dark brown (10YR 2/2, 3/1, 3/2; 7.5YR 3/2). It is a gravelly or very gravelly sandy clay loam or clay loam. Clay content varies from 25 to 35 percent. Rock fragments are 15 to 35 percent by volume. Reaction is neutral to mildly alkaline.

The Bt horizons are very dark grayish brown, dark brown, brown, or dark yellowish brown (10YR 3/2, 3/3, 4/3, 4/4; 7.5YR 4/4). Moist colors are very dark gray, very dark grayish brown, dark brown or dark reddish brown (10YR 3/1, 3/2, 3/3; 7.5YR 3/2, 3/3, 4/4; 5YR 3/3) moist. They are gravelly or very gravelly clay loam,

or very cobbly or very stony clay with 35 to 75 percent coarse fragments. Reaction is neutral to mildly alkaline.

Use and Vegetation: Used mainly for wildlife, range

and some timber production. Native vegetation consists of sparse Jeffrey pine, incense cedar, buckbrush, rabbitbrush, bottlebrush squirreltail, California fescue, Idaho fescue and other perennial grasses.

KILMERQUE FAMILY

The Kilmerque family consists of deep to very deep, well drained soils that formed in alluvium from basalt and andesitic rock. Kilmerque family soils are on volcanic upland terraces and fans. Slopes range from 2 to 9 percent. The mean annual precipitation is 15 to 25 inches and the mean annual temperature is about 44°F. Elevations are 4,600 to 5,000 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Coarse-loamy, mixed, frigid Ultic Haploxerolls.

Typical Pedon: Kilmerque family sandy loam - on a 3 percent sloping flat at 4,667 feet elevation, under ponderosa pine, bitterbrush, dwarf sagebrush, bluegrass and figwort. (Colors are for dry soil unless otherwise stated.)

A-0 to 1 inch; grayish brown (10YR 5/2) sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine roots; many very fine interstitial pores; medium acid (pH 6.0); clear smooth boundary.

Bw1-1 to 9 inches; grayish brown (10YR 5/2) loamy sand, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; few very fine interstitial pores; neutral (pH 7.0); clear smooth boundary.

Bw2-9 to 15 inches; grayish brown (10YR 5/2) loamy sand, very dark grayish brown (10YR 3/2) moist, weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and coarse roots; neutral (pH 7.0); gradual smooth boundary.

C-15 to 63+ inches; pale brown (10YR 6/3) loamy sand, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; few fine

medium and coarse roots; neutral (pH 7.0).

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; 2 miles east-southeast of Bray, 1/2 mile north of Dry Lake; about 25 yards south of Bray-Tennant Road; SE 1/4 NE 1/4 Section 30, T. 44 N., R. 1 W.

Range in Characteristics: Depth to a lithic contact is 40 to 60+ inches. Mean annual soil temperature is 45 to 47°F.; mean January soil temperature is 34 to 36°F.; and mean July soil temperature is 55 to 58°F. The soil temperature exceeds 41°F. from March 25 to November 25 and exceeds 47°F. from April 25 to November 5. The soil between the depths of 12 and 37 inches is dry in all parts from July 25 to October 20 and is moist in some or all parts the rest of the year. The mollic epipedon is 10 to 19 inches thick. Base saturation ranges from 50 to 75 percent throughout the upper 30 inches of soil and greater than 50 percent below.

The A horizon is dark grayish brown or grayish brown (10YR 4/2, 5/2). Moist colors are very dark brown or very dark grayish brown (10YR 2/2, 3/2). It is loamy sand or sandy loam with 4 to 10 percent clay and 0 to 5 percent gravel. Reaction is strongly acid to slightly acid. The Bw horizon is grayish brown, brown, or pale brown (10YR 5/2, 5/3, 6/3). Moist colors are very dark brown or dark brown (10YR 2/2, 3/3). It is loamy sand or sandy loam with 8 to 12 percent clay and 0 to 5 percent gravel. Reaction is medium acid to neutral.

The C horizon is brown or pale brown (10YR 5/3, 6/3). Moist colors are very dark grayish brown or dark brown (10YR 3/2, 3/3). It is loamy sand to very gravelly loamy sand or sandy loam with 8 to 10 percent clay and 0 to 40 percent gravel. Reaction is slightly acid to neutral.

Use and Vegetation: Used mainly as rangeland and wildlife habitat with some timber production. Native vegetation is ponderosa pine, white fir, bitterbrush, dwarf sagebrush, rabbitbrush, bluegrass, bottlebrush squirreltail and figwort.

MERKEL FAMILY

The Merkel family consists of very deep, well drained soils formed from ultramafic glacial till. These soils occur on ground moraines. Slopes range from 2 to 30 percent. The mean annual precipitation is 40 to 55 inches and the mean annual air temperature is about 41° F. Elevations are 5,000 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid Typic Xerochrepts.

Typical Pedon: Merkel family very gravelly loam - on a 25 percent east-facing slope at 5,440 feet elevation, under a cover of white fir, Jeffrey pine, western white pine, huckleberry oak and greenleaf manzanita. (Colors are for dry soil unless otherwise stated).

O-1 to 0 inches; matted conifer needles and twigs.

A1-0 to 2 inches; brown (7.5YR 5/4) very gravelly loam, dark brown (7.5YR 4/4) moist; moderate fine granular structure; soft, very friable, slightly sticky and nonplastic; few very fine and fine, and common medium roots; 25 percent pebbles and 10 percent cobbles, stones and boulders; neutral (pH 6.7); clear smooth boundary.

A2-2 to 10 inches; brown (7.5YR 5/4) very gravelly loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few very fine and fine and common medium roots; 10 percent pebbles and 35 percent cobbles, stones and boulders; neutral (pH 7.0); clear wavy boundary.

Bw-10 to 22 inches; brown (7.5YR 5/4) very cobbly loam, dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; slightly sticky and nonplastic; common very fine, fine and medium roots; few thin clay films as bridges; 10 percent pebbles and 35 percent cobbles, stones and boulders; neutral (pH 7.0); gradual wavy boundary.

C1-22 to 35 inches; yellowish brown (10YR 5/4) very cobbly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly sticky and nonplastic; few very fine, fine and medium roots; 15 percent

pebbles and 40 percent cobbles, stones and boulders; mildly alkaline (pH 7.5); gradual wavy boundary.

C2-35 to 60+ inches; yellowish brown (10YR 5/4) extremely cobbly sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly sticky and nonplastic; few very fine roots; 15 percent pebbles and 65 percent cobbles, stones and boulders; mildly alkaline (pH 7.5).

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; Cabin Meadow Creek; NW 1/4 NW 1/4 Section 36, T. 41 N., R. 7 W.

Range in Characteristics: The soil is greater than 60 inches deep to weathered glacial till. The mean annual soil temperature is 36 to 46° F.; the mean January soil temperature is 30 to 35° F.; the mean July soil temperature is 47 to 55° F. The soil temperature exceeds 41° F. from April 15 to November 20, and exceeds 47° F. from May 20 to October 20. The soil between the depths of 8 and 25 inches is dry in all parts from August 1 to October 15, and moist in some or all parts the rest of the year. The soil is slightly acid to mildly alkaline.

The A horizon is brown or strong brown (7.5YR 5/4, 5/6). Moist colors are brown or dark brown (7.5YR 4/4). It is very gravelly loam. Reaction slightly acid to neutral.

The Bw horizon is brown (7.5YR 5/4). Moist colors are brown or dark brown (7.5 YR 4/4, 5/4). It is very cobbly loam. Reaction is neutral.

The C horizon is brown, yellowish brown, pale brown, light yellowish brown, or light olive brown (10YR 5/3, 5/4, 6/3, 6/4; 2.5Y 5/4, 6/4). Moist colors are dark yellowish brown, or olive brown (10YR 3/4, 3/6, 4/4, 4/6; 2.5Y 4/4). It is very cobbly or extremely cobbly sandy loam, with 10 to 15 percent gravels and 40 to 75 percent rock fragments. Reaction is mildly alkaline.

Use and Vegetation: Used primarily for watershed, timber production, range, wildlife, and recreation. The native vegetation includes white fir, Jeffrey pine, western white pine, huckleberry oak, greenleaf manzanita, western serviceberry, sagebrush, various forbs and grasses.

MORICAL FAMILY

The Morical family consists of moderately deep and deep well drained soils that formed in residuum from metamorphic and igneous rocks. Morical family soils occur on mountain sideslopes, footslopes and volcanic upland flats. Slopes range from 2 to 50 percent. The mean annual precipitation is 20 to 40 inches and the mean annual air temperature is about 50° F. Elevations are 3,500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Fine-loamy, mixed, mesic Mollic Haploxeralfs.

Typical Pedon: Morical family gravelly sandy loam - on a 35 percent southwest-facing slope at 4,550 feet elevation, under a cover of ponderosa pine, Douglas-fir and pinemat manzanita. (Colors are for dry soil unless otherwise stated).

0-1 to 0 inches; loosely matted dried, undecomposed conifer and broadleaf needles, leaves, and twigs. Abrupt smooth boundary.

A1-0 to 3 inches; grayish brown (10YR 5/2) gravelly sandy loam, very dark grayish-brown (10YR 3/2) moist; moderate very fine and fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; 15 percent pebbles and 4 percent cobbles and stones; neutral (pH 7.0); clear smooth boundary.

A2-3 to 8 inches; light brownish gray (10YR 6/2) sandy loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine, and few medium roots; 10 percent pebbles and 2 percent cobbles and stones; medium acid (pH 6.7); abrupt smooth boundary.

Bt1-8 to 14 inches; light yellowish brown (10YR 6/4) sandy clay loam, yellowish brown (10YR 5/4) moist; weak, fine, angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few moderately thick clay films in pores and as bridges; common very fine, fine, medium, and coarse roots; 5 percent pebbles; slightly acid (pH 6.5); clear smooth boundary.

Bt2-14 to 25 inches; yellow (10YR 7/6) gravelly sandy loam, strong brown (7.5YR 5/6) moist; massive;

hard, firm, slightly sticky and slightly plastic; common moderately thick clay films as bridges, and many thick clay films lining pores; few very fine, fine, medium, and coarse roots; 15 percent pebbles; slightly acid (pH 6.2); clear smooth boundary.

Cr-25+ inches; weathered gabbro, with common thick clay films as bridges and in interstitial pores.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; near Kangaroo Lake; NE 1/4 NE 1/4 Section 9, T. 40 N., R. 7 W.

Range in Characteristics: Morical family soils are 20 to 60 inches deep. The mean annual soil temperature is 47° to 54° F. The mean January soil temperature is 33° to 47° F.; the mean July soil temperature is 57° to 64° F. The soil temperature at a depth of 20 inches exceeds 41° F. from March 1 through mid-December and exceeds 47° F. from mid-March through November 30. The soil is dry between the depths of 4 and 12 inches from mid-July until mid-October in most years and is moist in some or all parts the remainder of the year.

The A horizon is grayish brown, light brownish gray, brown, or yellowish brown (10YR 5/2, 5/3, 5/4, 6/2) dry, and very dark brown, very dark grayish-brown, or dark yellowish brown (10YR 2/1, 3/2, 3/3, 3/4) moist. It is loam gravelly sandy loam or sandy loam. Reaction is medium acid to mildly alkaline.

The Bt horizon is dark yellowish brown, brown, light yellowish brown or strong brown (10YR 4/4, 5/3, 5/4, 6/4; 7.5YR 5/6, 7/6) dry, and dark brown, yellowish brown, or dark reddish-brown (10YR 4/3, 5/4; 7.5YR 4/4, 5/4, 5/6; 5YR 3/4) moist. It is a loam, gravelly sandy loam, clay loam, or sandy clay loam. Clay content is 22 to 32 percent. Clay films are few to many, thin to thick on ped faces and pores. Reaction is slightly acid to neutral.

The Cr horizon is strong brown and reddish yellow (7.5YR 5/6, 6/6) dry, weathered igneous rock.

Use and Vegetation: Used for timber and grazing, also providing wildlife habitat and recreation. Native vegetation is ponderosa pine, incense cedar, Douglas-fir, juniper, sagebrush, rabbitbrush, squaw carpet, greenleaf manzanita, deerbrush, lupine and bottlebrush squirreltail.

NANNY FAMILY

The Nanny family consists of deep and very deep well drained soils that formed from depositional mixed till and residuum from metamorphic and igneous rocks. Nanny family soils are on ground and lateral moraines. Slopes range from 2 to 50 percent. The mean annual precipitation is 40 to 90 inches and the mean annual temperature is about 41°F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid, Typic Xerumbrepts.

Typical Pedon: Nanny family cobbly loamy sand - on a 48 percent north-facing slope at 6,000 feet elevation, under white fir, red fir and shrubs. (Colors are for dry soil unless otherwise stated).

O-3 to 0 inches; fresh and partially decomposed needles and twigs.

A1-0 to 2 inches; dark brown (10YR 3/3) very gravelly sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and few fine roots; many very fine interstitial pores; 55 percent pebbles and 5 percent stones; medium acid (pH 6.0); clear wavy boundary.

A2-2 to 12 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 3/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine, and common medium and fine roots; common very fine and fine interstitial pores; 40 percent pebbles and 2 percent cobbles; medium acid (pH 6.0); clear smooth boundary.

Bt1-12 to 25 inches; very pale brown (10YR 7/4) very gravelly sandy loam, olive brown (2.5Y 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few thin clay films as bridges; common very fine, fine and medium roots; common very fine interstitial pores; 35 percent pebbles and 4 percent cobbles; medium acid (pH 5.8); clear smooth boundary.

Bt2-25 to 46 inches; pale yellow (2.5Y 7/4) very gravelly sandy loam, olive brown (2.5Y 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few thin clay films as bridges; few very fine roots; few fine interstitial pores; 35 percent pebbles and 2 percent cobbles; medium acid (pH 5.8); clear smooth boundary.

R-46+ inches; hard metamorphic rock.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; SE 1/4 NE 1/4 Section 18, T. 47 N., R. 9W.

Range in Characteristics: Depth to a lithic or paralithic contact is 40 to 60+ inches. Mean annual soil temperature is 35 to 46°F.; mean January soil temperature is 31 to 35°F.; mean July soil temperature is 42 to 57°F. The soil temperature exceeds 41°F. from April 15 to November 20 and exceeds 47°F. from May 15 to October 20. The soil between the depths of 16 to 49 inches is dry from August 1 to October 15 in most years and moist in some or all parts of the year.

The A horizon is brown, dark brown, dark grayish brown, yellowish brown, or dark yellowish brown (10YR 3/3, 4/2, 4/4, 5/4; 7.5YR 5/4). Moist colors are very dark grayish brown, dark brown or very dark brown (10YR 2/2, 3/2, 3/3; 7.5YR 2/2, 3/2). It is very gravelly loam, very gravelly sandy loam, loam or loamy sand. Reaction is strongly to slightly acid.

The Bt horizon is pale yellow, light yellowish brown, brownish yellow, very pale brown or light brownish gray (10YR 6/6, 7/4; 2.5Y 6/2, 6/4, 7/4). Moist colors are light olive brown, dark yellowish brown, olive brown, brown or dark grayish brown (10YR 3/4, 4/3, 4/4; 2.5Y 4/2, 4/4, 5/4). It is very gravelly sandy loam or very gravelly loam. Reaction is strongly to slightly acid.

Use and Vegetation: Used for watershed, wildlife habitat, range and timber production. Native vegetation is red fir, white fir, incense cedar, Douglas-fir, sadler oak, thimbleberry, snowbrush, pinemat manzanita, California huckleberry, longleaf mahonia, greenleaf manzanita, bittercherry, serviceberry, modesty flower, dogbane, Oregon grape, forbs and grasses.

NEUSKE FAMILY

The Neuske family consists of moderately deep or deep well drained soils that formed in residuum from extrusive igneous rocks. Neuske family soils occur on structural benches. Slopes range from 2 to 30 percent. The mean annual precipitation is 12 to 20 inches and the mean annual air temperature is about 41°F. Elevations are 4,600 to 6,000 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Fine-loamy, mixed, frigid Mollic Haploxeralfs.

Typical Pedon: Neuske family loam - on a 5 percent southwest-facing slope at 5,030 feet elevation, under a cover of ponderosa pine. (Colors are for dry soil unless otherwise noted.)

O-3 to 0 inches; organic mat of fresh pine needles, more decomposed with increasing depth. Abrupt smooth boundary.

A1-0 to 2 inches; brown (7.5YR 5/4) loam, dark reddish brown (5YR 3/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine interstitial pores; 5 percent pebbles and 5 percent cobbles; slightly acid (pH 6.5); clear smooth boundary.

A2-2 to 8 inches; brown (7.5YR 5/4) loam, dark reddish brown (5YR 3/4) moist; very weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine and medium roots; many very fine interstitial and few very fine tubular pores; 5 percent pebbles and 5 percent cobbles; slightly acid (pH 5.2); clear smooth boundary.

Bt1-8 to 16 inches; brown (7.5YR 5/4) cobbly loam, dark brown (7.5YR 3/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and common fine and medium roots; few medium tubular pores; few thin clay films on ped faces; 5 percent pebbles and 25 percent cobbles; slightly acid (pH 6.5); gradual smooth boundary.

Bt2-16 to 27 inches; yellowish brown (10YR 5/4) loam, brown and dark brown (7.5YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common fine, medium and coarse roots; common very fine tubular pores; many thin clay films on ped faces and as bridges; 10 percent cobbles; slightly acid (pH

6.5); gradual smooth boundary.

C-27 to 45 inches; yellowish brown (10YR 5/4) loam, brown and dark brown (7.5YR 4/4) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few fine and common medium roots; common very fine tubular and interstitial pores; common thin clay films on ped faces and as bridges; slightly acid (pH 6.5).

R-45+ inches; moderately hard rock.

Type Location: Goosenest District, Klamath National Forest, Siskiyou County, California; about 1 mile SE from Garner Butte Summit and about 1 mile NE from Garner Mountain Summit; NW 1/4 SW 1/4 Section 35, T. 44 N., R. 1 E.

Range in Characteristics: Neuske family soils are 20 to 60 inches deep. The mean annual soil temperature is 41 to 47° F. The soil temperature at a depth of 20 inches exceeds 41° F. from May 5 to November 10 and exceeds 47° F. from June 10 to October 20. The soil is dry between the depth of 12 to 24 inches from mid-July to mid-October and is moist in some or all parts the remainder of the year.

The A horizon is dark grayish brown, grayish brown or brown (7.5YR 5/4; 10YR 4/2, 4/3, 5/2, 5/3) dry, dark reddish brown, black, or very dark brown (5YR 3/3, 3/4; 10YR 2/0, 2/2) moist. It is loam or sandy loam. Reaction is slightly acid.

The Bt horizon is yellowish brown, brown or dark brown (10YR 5/4; 7.5YR 4/4, 5/4) dry, dark brown or dark reddish brown (5YR 3/4; 7.5YR 3/4, 4/4) moist. It is loam, cobbly loam, clay loam or sandy clay loam. Clay content is 15 to 35 percent. Clay films vary from few to many, thin to moderately thick on ped faces and pores. Reaction is slightly acid to neutral.

The C horizon is brown or yellowish brown (7.5YR 4/4, 5/4; 10YR 5/4) dry, dark yellowish brown, brown or dark brown (7.5YR 3/2, 3/4, 4/4; 10YR 4/4) moist. It is loam or sandy loam. Reaction is neutral.

Use and Vegetation: These soils are used for woodland, grazing, wildlife habitat and recreation. Native vegetation consists of ponderosa pine, western juniper, mountain mahogany, bitterbrush, bottlebrush squirreltail cheatgrass, bluegrass, Idaho fescue, rubber rabbitbrush and Parry rabbitbrush.

OLETE FAMILY

The Olete family consists of deep or very deep, somewhat excessively drained residual soils formed from ultramafic rocks. These soils occur on steep to extremely steep mountainsides. Slopes range from 30 to 70 percent. The mean annual precipitation is 50 to 80 inches and the mean annual temperature is about 52° F. Elevations are 1,500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, mixed, mesic Typic Xerochrepts.

Typical Pedon: Olete family very gravelly loam - on a 60 percent east-facing slope at 4,000 feet elevation, under a cover of huckleberry oak, Jeffrey pine and incense cedar. (Colors are for dry soil unless otherwise stated.)

A-0 to 3 inches; strong brown (7.5YR 5/6) very gravelly loam, brown (7.5YR 4/4) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; abundant roots; strongly acid (pH 5.1); clear smooth boundary.

B-3 to 9 inches; reddish yellow (7.5YR 6/6) very gravelly loam, yellowish red (5YR 5/6) moist; moderate fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common roots; strongly acid (pH 5.3); gradual smooth boundary.

Bt1-9 to 18 inches; reddish yellow (7.5YR 6/6) gravelly loam, strong brown (7.5YR 5/6) moist; moderate fine subangular blocky structure; hard, firm, sticky and slightly plastic; common roots; medium acid (pH 5.7); gradual smooth boundary.

Bt2-18 to 36 inches; brownish yellow (10YR 6/6) very gravelly loam, strong brown (7.5YR 5/6) moist; weak fine subangular blocky structure; firm, sticky and slightly plastic; common roots; medium acid (pH 6.0); clear wavy boundary.

C-36 to 60+ inches; yellow (10YR 7/6) very gravelly loam, reddish yellow (7.5YR 6/6) moist; massive; friable, slightly sticky and slightly plastic; few roots; slightly acid (pH 6.2).

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; Lick Creek, 0.7 miles southeast of Red Hill; SE 1/4 SE 1/4 Section 16, T. 15 N., R. 5 E.

Range in Characteristics: The soil is 40 to 60+ inches deep to hard fractured bedrock. The mean annual soil temperature is 47 to 59° F.; the mean January soil temperature is 36° to 45° F.; the mean July soil temperature is 55 to 73° F. The soil temperature exceeds 41° F. from February 20 to December 1, and is greater than 47° F. from March 20 to November 15. The soil between the depths of 9 and 26 inches is dry in all parts from July 15 to October 20, and moist in some or all parts the rest of the year. The soil is slightly to strongly acid. Base saturation is greater than 60 percent between 10 and 30 inches.

The A horizon is brown, strong brown, light brown, reddish yellow, or yellowish red (7.5YR 5/4, 5/6, 6/4, 6/6; 5YR 5/6, 6/6). Moist colors are dark brown, strong brown, reddish brown, or yellowish red (7.5YR 4/4, 4/6; 5YR 4/3, 4/4, 4/6). It is very gravelly loam or gravelly loam, with 25 to 45 percent gravel and 5 to 10 percent cobbles. Reaction is medium to slightly acid.

The Bt horizon is light brown, reddish yellow, pink, light reddish brown, or reddish yellow (10YR 6/6; 7.5YR 6/4, 6/6, 6/8, 7/4; 5YR 6/4, 6/6). Moist colors are brown, strong brown, reddish brown, yellowish red or red (7.5YR 4/4, 4/6, 5/4, 5/6; 5YR 5/3, 5/4, 5/6; 2.5YR 4/4, 4/6). It is very gravelly loam, extremely gravelly loam, very gravelly clay loam, or extremely gravelly clay loam. Rock fragments are 35 to 60 percent gravel and 10 to 20 percent cobbles.

Reaction is medium acid to neutral.

The C horizon is light yellowish brown, brownish yellow, yellow, light brown, reddish yellow, pinkish gray, pink or light reddish brown (10YR 6/4, 6/6, 7/6; 7.5YR 6/4, 6/6, 7/2, 7/4, 7/6; 5YR 6/2, 6/3, 6/4). Moist colors are brown strong brown, light brown, reddish yellow, reddish gray, or reddish brown (7.5YR 5/4, 5/6, 6/4, 6/6; 5YR 5/2, 5/3, 5/4). It is very gravelly loam, extremely gravelly loam, very gravelly sandy loam, or extremely gravelly sandy loam. Rock fragments are 35 to 60 percent gravel and 10 to 20 percent cobbles.

Reaction is slightly acid to neutral.

Typically, the lithic contact is hard, fractured peridotite.

Use and Vegetation: Used primarily for watershed and wildlife habitat. Secondary use includes timber production. The native vegetation includes Jeffrey pine, incense cedar, Douglas-fir, California bay, Fremont silktassel, coffeeberry, huckleberry oak and pinemat manzanita.

OOKEN FAMILY

The Oosen family consists of very deep, somewhat excessively drained soils that formed in volcanic ash deposits. Oosen family soils are on volcanic mountains and flats. Slopes range from 2 to 50 percent. The mean annual precipitation is 20 to 40 inches and mean annual temperature is about 41°F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Ashy, frigid, Dystric Xeropsamments.

Typical Pedon: Oosen family fine sandy loam - on an 8 percent northeast-facing slope at 6,000 feet elevation, under white fir, ponderosa pine, lodgepole pine, snowbrush, greenleaf manzanita and bottlebrush squirreltail. (Colors are for dry soil unless otherwise noted.)

O-1 to 0 inches; fresh and partially decomposed conifer needles and twigs.

A1-0 to 6 inches; light yellowish brown (10YR 6/4) sandy loam, dark grayish brown (10YR 3/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine and medium roots; few fine and very fine interstitial pores; neutral (pH 7.0); clear smooth boundary.

A2-6 to 11 inches; pale brown (10YR 6/3) sandy loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common, very fine and few fine medium and coarse roots; few very fine interstitial pores; neutral (pH 7.0); clear smooth boundary.

C1-11 to 26 inches; pale brown (10YR 6/3) loamy sand, dark brown (10 YR 3/3) moist; weak medium sub-angular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine, fine and medium roots; few very fine interstitial pores; neutral (pH 7.0); gradual smooth boundary.

C2-26 to 40 inches; pale brown (10YR 6/3) loamy sand, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine, fine, and medium and common coarse roots; few very fine tubular and interstitial pores; neutral (pH 7.0); gradual smooth boundary.

C3-40 to 71+ inches; light brownish gray (2.5Y 6/2) loamy sand, very dark grayish brown (2.5Y 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; few medium and common coarse roots; few interstitial pores; 3 percent cobbles; neutral (pH 7.0).

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; 2.5 miles northeast of Whaleback Mountain, 4.5 miles southeast of Deer Mountain Lodge, 3.5 miles south of Deer Mountain, 75 yards northeast of turnout on Deer Mountain road; SE 1/4 NW 1/4 Section 20, T. 43 N., R. 2 W.

Range in Characteristics: Depth to a lithic contact is greater than 60 inches. The mean annual soil temperature is 39 to 46° F., mean January soil temperature is 32 to 36° F.; and mean July soil temperature is 47 to 57° F. The soil temperature exceeds 41° F. from April 10 to November 20 and exceeds 47° F. from May 15 to October 25. The soil between a depth of 9 and 33 inches is dry in all parts from August 1 to October 15 in most years and is moist in some or all parts the rest of the year.

The A horizon is dark grayish brown, grayish brown, brown, pale brown or light yellowish brown (10YR 4/2, 5/2, 5/3, 6/3, 6/4). Moist colors are very dark brown, very dark grayish brown or dark brown (10YR 2/2, 3/2, 3/3; 7.5YR 3/2). It is loamy sand, loamy fine sand, sandy loam or fine sandy loam, with 1 to 13 percent gravel. Reaction is medium acid to neutral.

The C horizon is pale brown, light gray, very pale brown or light brownish gray (10YR 6/3, 7/2, 7/3; 2.5Y 6/2). Moist colors are very dark grayish brown, dark brown, dark grayish brown, brown, dark yellowish brown, or gray (2.5Y 3/2; 10YR 3/2, 3/3, 4/2, 4/3, 4/4, 5/1). It is sandy loam, gravelly sandy loam, fine sandy loam, loamy fine sand, cobbly loamy fine sand, loamy sand, or gravelly to extremely gravelly loamy sand with 1 to 5 percent clay. The 10 to 40 inch control section has a weighted average of less than 35 percent gravel, cobbles, and stones. Reaction is slightly acid to neutral.

Use and Vegetation: Used for timber production and wildlife habitat. Native vegetation includes white fir, ponderosa pine, few lodgepole pine, red fir, juniper, snowbrush, greenleaf manzanita, pinemat manzanita, squaw carpet, rabbitbrush, bitterbrush, blue elderberry, bottlebrush squirreltail, stipa and carex.

OVALL FAMILY

The Ovall family consists of deep, well drained soils formed from granitic parent material. The soils occur on mountain sideslopes. Slopes range from 30 to 50 percent. The mean annual precipitation is 35 to 50 inches and the mean annual temperature is about 52°F. Elevations are 1,500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Coarse-loamy, mixed, mesic Typic Xerumbrepts.

Typical Pedon: Ovall family sandy loam - on a 60 percent south-facing slope at 1,450 feet elevation, under a cover of ponderosa pine and madrone. (Colors are for dry soil unless otherwise stated).

O-1 to 0 inches; undecomposed and slightly decomposed plant material.

A1-0 to 2 inches; brown (10YR 4/3) sandy loam, very dark brown (10YR 2/2) moist; weak very fine granular structure; soft, very friable, slightly sticky and nonplastic; abundant roots; slightly acid (pH 6.4); clear smooth boundary.

A2-2 to 5 inches; brown (10YR 5/3) sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and nonplastic; common roots; neutral (pH 6.7); clear smooth boundary.

A3-5 to 10 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common roots; slightly acid (pH 6.1); gradual smooth boundary.

Bw-10 to 18 inches; yellowish brown (10YR 5/4) sandy loam, dark brown (10YR 4/3) moist; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common roots; slightly acid (pH 6.2); gradual smooth boundary.

C1-18 to 28 inches; light yellowish brown (10YR 6/4) sandy loam, olive brown (2.5YR 4/4) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few roots; slightly acid (pH 6.4); diffuse boundary.

C2-28 to 43 inches; olive yellow (2.5Y 6/6) sandy loam, olive (5Y 4/3) moist; massive; slightly hard, friable, slightly sticky, and nonplastic; very few roots; slightly acid (pH 5.1); gradual wavy boundary.

Cr-43+ inches; soft weathered granitic rock.

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; Seiad Valley, SW 1/4 NW 1/4 Section 12, T. 46 N., R. 12 W.

Range in Characteristics: The soil is 40 to 60 inches deep to soft weathered granitic rock. The mean annual soil temperature is 47 to 59°F.; the mean January soil temperature is 36 to 45°F.; the mean July soil temperature is 55 to 70°F. The soil temperature exceeds 41°F. from February 20 to December 1, and is greater than 47°F. from March 20 to November 15. The soil between the depths of 10 and 30 inches is dry in all parts from July 15 to October 20, and moist in some or all parts the rest of the year.

The A horizon is dark grayish brown, brown, or grayish brown (10YR 4/2, 4/3, 5/2, 5/3). Moist colors are black, very dark brown, very dark gray, very dark grayish brown, or dark brown (10YR 2/1, 2/2, 3/1, 3/2, 3/3). It is loam, sandy loam, or coarse sandy loam, with less than 15 percent coarse fragments. Reaction is slightly acid to neutral.

The Bw horizon is brown, yellowish brown, pale brown or light yellowish brown (7.5YR 5/2, 5/4; 10YR 5/3, 5/4, 6/3, 6/4). Moist colors are dark brown, dark yellowish brown, or light olive brown (7.5YR 3/2, 3/4; 10YR 4/3, 4/4; 2.5Y 5/4). It is loam or sandy loam, with less than 15 percent coarse fragments. Reaction is slightly acid.

The C horizon is yellowish brown, light yellowish brown, or olive yellow (10YR 5/4, 6/4; 2.5Y 6/4, 6/6). Moist colors are dark grayish brown, olive brown, olive gray, or olive (2.5Y 4/2, 4/4; 5Y 4/2, 4/3). It is sandy loam or loamy sand, with less than 15 percent coarse fragments. Reaction is strongly to slightly acid.

Use and Vegetation: Used for watershed, range, wildlife habitat and timber production. The native vegetation includes ponderosa pine, Douglas-fir, white fir, madrone, black oak, chinquapin, greenleaf manzanita and incense cedar.

PARKS FAMILY

The Parks family consists of moderately deep, well drained soils formed from ultramafic rocks. These soils occur on mountain sideslopes. Slopes range from 30 to 70 percent. The mean annual precipitation is 70 to 100 inches and the mean annual temperature is about 41°F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, serpentinitic, frigid Typic Xerochrepts.

Typical Pedon: Parks family gravelly fine sandy loam - on a 60 percent southwest facing-slope at 5,500 feet elevation, under a montane-shrub cover. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches; weakly matted conifer and shrub leaves.

A1-0 to 2 inches; yellowish red (5YR 4/6) gravelly fine sandy loam, reddish brown (5YR 4/4) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and nonplastic; abundant roots; neutral (pH 6.6); clear smooth boundary.

AB-2 to 7 inches; red (2.5YR 4/6) gravelly fine sandy loam, reddish brown (2.5YR 4/4) moist; moderate very fine and fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; abundant roots; neutral (pH 6.7); gradual smooth boundary.

Bw-7 to 15 inches; yellowish red (5YR 5/6) gravelly fine sandy loam, yellowish red (5YR 5/6) moist; weak moderate and coarse subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common roots; neutral (pH 6.8); diffuse boundary.

BC-15 to 33 inches; strong brown (7.5YR 5/8) very gravelly loamy fine sand, strong brown (7.5YR 5/7) moist; massive; soft, very friable, nonsticky, nonplastic; few roots; neutral (pH 6.8); clear smooth boundary.

C-33 to 37 inches; strong brown (7.5YR 5/8) very gravelly fine sandy loam, strong brown (7.5YR 5/8) moist; massive; few roots; neutral (pH 6.8); abrupt irregular boundary.

R-37+ inches; hard bedrock.

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; 1.3 miles NE of Red Butte; SW 1/4 SW 1/4 Section 8, T. 47 N., 4. 11 W.

Range in Characteristics: The soil is 20 to 40 inches deep to fractured bedrock. The mean annual soil temperature is about 35 to 46° F.; the mean January soil temperature is 30 to 35° F.; the mean July soil temperature is 43 to 55° F. The soil temperature exceeds 41° F. from April 15 to November 20, and is greater than 47° F. from May 15 to October 20. The soil between the depths of 12 and 35 inches is dry in all parts from August 1 to October 15, and moist in some or all parts the rest of the year. The soil is slightly acid to neutral.

The A horizon is reddish brown, red, or yellowish red (2.5YR 4/4, 5/4, 4/6; 5YR 5/3, 5/4, 4/6). Moist colors are dark reddish brown, reddish brown, or yellowish red (2.5YR 3/4, 4/4, 4/6; 5YR 4/3, 4/4, 4/6, 3/4). It is gravelly loam, gravelly sandy loam, or gravelly fine sandy loam, with 20 to 40 percent gravels and 5 to 20 percent cobbles. Reaction is slightly acid to neutral.

The B horizon is reddish brown, yellowish red, brown, or strong brown, both dry and moist (5YR 4/3, 5/3, 5/4, 5/6, 5/8; 7.5YR 5/4, 5/6, 5/7, 5/8). It is very gravelly or gravelly loam, very gravelly or gravelly fine sandy loam, or very gravelly or gravelly loamy fine sand. There are 25 to 50 percent gravels and 5 to 20 percent cobbles. The family control section has a weighted average of greater than 35 percent coarse fragments. Reaction is slightly acid to neutral.

The C horizon is strong brown, reddish yellow, or brownish yellow (7.5YR 5/6, 5/8, 6/6, 6/8; 10YR 6/6, 6/8). Moist colors are strong brown and yellowish brown (7.5YR 4/6, 5/6, 5/8; 10YR 5/4, 5/6, 5/8). It is gravelly or very gravelly loam or gravelly or very gravelly fine sandy loam, with 35 to 60 percent gravel and 20 to 60 percent cobbles. Reaction is neutral.

Use and Vegetation: Used for timber, watershed, and wildlife habitat. The native vegetation includes Jeffrey pine, incense cedar, western white pine, white fir, red fir, huckleberry oak, pinemat manzanita, currant and beargrass.

PRATHER FAMILY

The Prather family consists of very deep well drained soils formed from metamorphic rocks. Prather family soils occur on mountain sidelopes and landslide deposits. Slopes range from 30 to 50 percent. The mean annual precipitation is 50 to 80 inches and the mean annual temperature is about 52°F. Elevations are 1,000 to 4,500 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Clayey, kaolinitic, mesic, Xeric Haplohumults.

Typical Pedon: Prather family loam - on a 30 percent convex northeast-facing slope at 2,100 feet elevation, under mixed conifers, hardwood, shrubs and forbs. (Colors are for dry soil unless otherwise stated).

0-2 to 0 inches; loose and weakly matted fresh broad leaves and needles.

A1-0 to 1 inch; reddish brown (5YR 4/4) loam, reddish brown (5YR 4/3) moist; strong very fine granular structure; soft, very friable, slightly sticky and non-plastic; many roots; slightly acid (pH 6.1); abrupt smooth boundary.

A2-1 to 4 inches; yellowish red (5YR 5/6) loam, dark reddish brown (2.5YR 3/4) moist; moderate fine granular structure; slightly hard, friable, sticky and slightly plastic; few thin clay films on ped faces; common roots; slightly acid (pH 6.2); clear smooth boundary.

B-4 to 9 inches; red (2.5YR 5/6) clay loam, dark red (2.5YR 3/6) moist; moderate fine subangular blocky structure; slightly hard, friable, sticky and plastic; common thin clay films on ped faces; common roots; slightly acid (pH 6.4); gradual smooth boundary.

Bt1-9 to 22 inches; red (2.5YR 5/8) silty clay loam, red (2.5YR 4/6) moist; weak fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; many moderately thick clay films on ped faces; few roots; medium acid (pH 6.0); gradual smooth boundary.

Bt2-22 to 35 inches; red (2.5YR 5/8) silty clay loam, red (2.5YR 4/6) moist; weak fine and medium angular

blocky structure; slightly hard, friable, sticky and plastic; continuous moderately thick clay films on ped faces; very few roots; medium acid (pH 5.8); diffuse boundary.

Bt3-35 to 55 inches; red (2.5YR 5/8) silty clay loam, red (2.5YR 4/6) moist; weak coarse angular blocky structure; slightly hard, friable, sticky and plastic; continuous moderately thick clay films on ped faces; very few roots; medium acid (pH 5.8); diffuse boundary.

BC-55 to 79+ inches; red (2.5YR 5/8) silty clay loam, red (2.5YR 4/8) moist; massive; slightly hard, friable, sticky and plastic; medium acid (pH 5.9).

Type Location: Ukonom District, Klamath National Forest; Siskiyou County, California, SW 1/4 SW 1/4 Section 32, T. 12 N., R. 6 E.

Range in Characteristics: Depth to a lithic contact is greater than 60 inches. The mean annual soil temperature is 48 to 59°F.; the mean January soil temperature is 36 to 45°F.; the mean July soil temperature is 60 to 78°F. The soil temperature exceeds 41°F. from February 15 to December 10, and exceeds 47°F. from March 10 to November 15. The soil between the depths of 6 to 18 inches is dry in all parts from July 10 to October 20 in most years and moist in some or all parts the rest of the year.

The A horizon is reddish brown or yellowish red (5YR 4/4, 5/6). Moist colors are reddish brown or dark reddish brown (5YR 4/3; 2.5YR 3/4). It is a loam. Reaction is slightly acid.

The B horizon is red (2.5YR 5/6, 5/8). Moist colors are dark red or red (2.5YR 3/6, 4/6, 4/8). It is clay loam or silty clay loam. Reaction is medium to slightly acid.

Use and Vegetation: Used for timber production, wildlife habitat and range. Native vegetation is mostly Douglas-fir, sugar pine, tanoak, madrone and mountain dogwood with an understory of western blueberry, salal, creeping snowberry, chinquapin, Oregon grape, longleaf mahonia, rose, poison oak, bracken fern and princes pine.

QUAM FAMILY

The Quam family consists of deep and very deep somewhat poorly, poorly or very poorly drained soils that formed in alluvium from extrusive igneous rock and volcanic ash sources. They occupy basin, basin terrace, low terrace and fan positions. Slopes range from 0 to 5 percent. The mean annual precipitation is 20 to 30 inches and the mean annual air temperature is about 43°F. Elevations are 4,500 to 5,500 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Fine-silty, mixed, frigid, Cumulic Haplaquolls.

Typical Pedon: Quam family loam - on a 2 percent sloping flat at 4,560 feet elevation, under a cover of sedges, rushes and other meadow vegetation. (Colors are for dry soil unless otherwise noted.)

A1-0 to 1 inch; gray (10YR 5/1) loam, black (10YR 2/1) moist, moderate medium platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine roots; many very fine vesicular pores; medium acid (pH 6.0); abrupt smooth boundary.

A2-1 to 5 inches; dark gray (10YR 4/1) silt loam, black (10YR 2/1) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; many very fine roots; few very fine interstitial pores; medium acid (pH 6.0); clear smooth boundary.

A3-5 to 21 inches; dark gray (10YR 4/1) silt loam, black (10YR 2/1) moist; distinct mottling begins to occur; moderate medium and coarse subangular blocky structure; slightly hard, very friable, sticky and slightly plastic; common very fine roots; few fine interstitial pores; slightly acid (pH 6.5); clear

smooth boundary.

C-21 to 60+ inches; light brownish gray (10YR 6/2) silt loam, very dark grayish brown (10YR 3/2) moist; distinct and prominent mottling; moderate medium subangular blocky structure; slightly hard, very friable, sticky and slightly plastic; common very fine roots; common very fine interstitial and tubular pores; neutral (pH 7.0).

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; Bray Quadrangle; SW 1/4 SW 1/4 SE 1/4 Section 17, T. 44 N., R. 1 E.

Range in Characteristics: Quam family soils are 40 to 60+ inches deep that formed in alluvium. The mean annual soil temperature is 38 to 46° F.; the mean January soil temperature is 30 to 35° F.; the mean July soil temperature is 43 to 55° F. The soil temperature at a depth of 20 inches exceeds 41° F. from May 1 to November 10 and exceeds 47° F. from June 10 to October 20. The soils are moist between the depths of 4 and 12 inches, except during the period of August 1 to October 1.

The A horizons are gray, grayish brown or dark gray (10YR 4/1, 5/1, 5/2) dry, black or very dark brown (10YR 2/1, 2/2) moist. It is loam or silt loam. Coarse fragments are 0 to 5 percent. Reaction is medium acid.

The C horizon is strongly gleyed. It is light brownish gray (10YR 6/2) dry, very dark grayish brown (10YR 3/2) moist. It is silt loam or silty clay loam. Reaction is neutral.

Use and Vegetation: Used mainly for grazing during summer months. The natural vegetation is sedges, rushes and various water loving grasses.

REDCAP FAMILY

The Redcap family consists of deep or very deep, somewhat excessively to excessively drained soils that formed in material weathered from igneous rocks overlain by moderately thick layers of young pyroclastic materials. These soils are on volcanic uplands. Slopes range from 2 to 30 percent. The mean annual precipitation is 20 to 40 inches and mean annual temperature is about 40°F. Elevations are 5,400 to 6,700 feet. The climate is moderate summer mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Cindery over medial-skeletal, frigid Dystric Xerorthents.

Typical Pedon: Redcap family very gravelly coarse sand - on a 5 percent concave north-facing slope at 6,400 feet elevation, under lodgepole pine, red fir, pinemat manzanita and sedges. (Colors are for dry soil unless otherwise stated.)

O-2 to 0 inches; fresh and partially decomposed conifer needles and twigs.

A1-0 to 2 inches; grayish brown (10YR 5/2) gravelly coarse sand, very dark brown (10YR 2/2) moist; single grained; loose, loose, nonsticky and nonplastic; common very fine roots; common very fine and few fine interstitial pores; 25 percent fine and medium pumice pebbles; medium acid (pH 6.0); clear wavy boundary.

C-2 to 22 inches; stratified layers of ash and pumice; light gray to white (10YR 6/1, 7/1, 7/2, 8/1, 8/2) gravelly to very gravelly coarse sand to loamy sand, black to pale brown (10YR 2/1 to 6/3) moist; massive to single grained; loose to soft, loose to very friable, nonsticky, and nonplastic; 15 to 55 percent pumice pebbles; slightly acid (pH 6.5); abrupt wavy boundary.

2Ab-22 to 36 inches; yellowish brown (10YR 5/4) extremely cobbly sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine, medium, and coarse and common fine roots; few very fine interstitial pores; 15 percent pebbles; 40 percent cobbles, and 20 percent stones; slightly acid (pH 6.5); gradual wavy boundary.

2Bt1b-36 to 48 inches; yellowish brown (10YR 5/4) extremely cobbly sandy loam, dark yellowish brown (10YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; very few thin clay bridging; few very fine, fine,

medium and coarse roots; few very fine interstitial and tubular pores; 25 percent pebbles; 40 percent cobbles, and 10 percent stones; slightly acid (pH 6.5); gradual wavy boundary.

2Bt2b-48 to 55 inches; pale brown (10YR 6/3) very gravelly sandy loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; hard, firm, nonsticky and nonplastic; few thin clay films in pores and in ped faces; few very fine, fine, and medium roots; few fine tubular pores; 30 percent pebbles, 10 percent cobbles and 5 percent stones; slightly acid (pH 6.5); abrupt smooth boundary.

R-55+ inches; fractured, mixed igneous rocks.

Type Location: Goosenest Ranger District, Klamath National Forest; Siskiyou County, California; 2 1/2 miles north of Little Mt. Hoffman; about 3 miles northwest of Medicine Lake Glass Flow; SE 1/4 NE 1/4 Section 31, T. 44 N., R. 3 E.

Range in Characteristics: Depth to a lithic contact is 40 to 60+ inches. Mean annual soil temperature is 39 to 44° F.; mean January soil temperature is 30 to 35° F.; and mean July soil temperature is 43 to 54° F. The soil temperature exceeds 41° F. from April 25 to November 20 and exceeds 47° F. from June 1 to October 20. The soil between a depth of 15 to 40 inches is dry throughout from August 1 to October 15 in most years and is moist in some or all parts the rest of the year.

The A horizon is dark grayish brown, grayish brown, or brown (10YR 4/2, 5/2, 5/3). Moist colors are very dark brown, very dark grayish brown, or dark brown (10YR 2/2, 3/2, 3/3). It is gravelly to extremely gravelly coarse sand with 0.5 to 8 percent clay and 15 to 90 percent pumice gravel. Reaction is strongly to slightly acid.

The C horizon is composed of stratified layers of ash and pumice. It is light gray to white (10YR 6/1, 7/1, 7/2, 8/1, 8/2). Moist colors are black to pale brown (10YR 2/1, 3/1, 3/2, 4/3, 5/2, 5/3, 6/2, 6/3). It is gravelly to very gravelly coarse sand or gravelly to very gravelly loamy coarse sand with 0.5 to 8 percent clay and 15 to 55 percent pumice gravel (the weighted average is greater than 35 percent). Reaction is strongly to slightly acid.

The 2Ab horizon is brown or yellowish brown (10YR 5/3, 5/4). Moist colors are dark brown or dark yellowish brown (10YR 3/3, 4/4). It is sandy loam, gravelly sandy loam, or very cobbly to extremely cobbly sandy loam

with 10 to 20 percent clay and 12 to 75 percent gravel, cobbles and stones. Reaction is medium acid to neutral.

The 2Btb horizon is yellowish brown or pale brown (10YR 5/4, 6/3). Moist colors are dark brown or dark yellowish brown (10YR 3/3, 3/4, 4/4). It is gravelly to very gravelly sandy loam or very cobbly to extremely cobbly sandy loam with 12 to 16 percent clay and 20

to 75 percent gravel, cobbles, and stones (but weighted average of control section has greater than 35 percent coarse fragments). Reaction is slightly acid to neutral.

Use and vegetation: Used mainly for timber production and wildlife habitat. Native vegetation is lodgepole pine, white fir, red fir, pinemat manzanita, greenleaf manzanita, snowbrush, sedges and few perennial grasses.

RIVERWASH

Riverwash consists of unconsolidated and stratified sandy, silty, clayey, stony, cobbly and gravelly sediment that is reworked annually. It supports little or no vegetation. Slope is 0 to 2 percent. Drainage is excessive. Areas

of riverwash are subject to deposition when flooding occurs. Riverwash is used primarily for wildlife habitat and watershed. A few areas are mined for sand, gravel and precious metals (gold and platinum).

ROCK OUTCROP

Rock outcrop consists of exposed bare bedrock. It supports a few forbs and occasionally a stunted tree.

Due to the very rapid runoff from the bare rock, the erosion hazard on the adjacent areas is very high.

ROGUE FAMILY

The Rogue family consists of moderately deep to deep, well drained soils formed in residuum from granitic rocks. These soils occur on mountain sideslopes and ridges. Slopes range from 30 to 50 percent. The mean annual precipitation is 50 to 60 inches and the mean annual temperature is about 45°F. Elevations are 4,800 to 6,500 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Coarse-loamy, mixed, frigid Dystric Xerochrepts.

Typical Pedon: Rogue family loamy sand - on a 50 percent northwest-facing slope at 4,800 feet elevation, under a mixed conifer and shrub cover. (Colors are for dry soil unless otherwise stated).

O-2 to 0 inches; matted, fresh and partially decomposed needles and twigs.

A1-0 to 2 inches; light olive brown (2.5Y 5/4) loamy sand, dark brown (10YR 3/3) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; 10 percent pebbles; slightly acid (pH 6.5); clear smooth boundary.

Bt1-2 to 11 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 3/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine, and few medium roots; common very fine and fine interstitial and tubular pores; very few thin clay films as bridges; 10 percent pebbles; neutral (pH 7.0); clear smooth boundary.

Bt2-11 to 29 inches; very pale brown (10YR 7/4) sandy loam, yellowish brown (10YR 5/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine and medium roots; common very fine and fine interstitial pores; common thin clay films on ped faces and as bridges; 12 percent pebbles; neutral

(pH 7.0); gradual smooth boundary.

Cr-29+ inches; soft, highly weathered granitic rock.

Type Location: Salmon River District, Klamath National Forest; Siskiyou County, California; 0.5 miles southwest of Bowerman Peak; SE 1/4 NW 1/4 Section 11, T, 9 N., R. 11 W.

Range in Characteristics: The soil is 20 to 60 inches deep to soft weathered bedrock. The mean annual soil temperature is 40 to 46° F.; the mean January temperature is 30 to 36° F.; the mean July temperature is 44 to 55° F. The soil temperature exceeds 41° F. from April 10 to November 10, and is greater than 47° F. from May 10 to October 20. The soil between the depths of 14 and 41 inches is dry in all parts from August 1 to October 15, and moist in some or all parts the rest of the year. The soil is medium acid to neutral.

The A horizon is light olive brown, grayish brown, brown or light brownish gray, light brownish gray (2.5Y 5/4; 10YR 5/2, 5/3, 6/2). Moist colors are very dark brown, dark brown or dark grayish brown (10YR 3/2, 3/3, 3/4). It is loam, sandy loam or loamy sand, with 2 to 15 percent gravel. When mollic colors occur the epipedon is too thin to be a mollic epipedon. Reaction is medium acid to neutral.

The Bt horizon is yellowish brown, pale brown or very pale brown (10YR 5/4, 6/3, 7/4). Moist colors are dark yellowish brown, brown, dark brown or brownish yellow (10YR 3/4, 4/3, 5/4). It is loamy sand or sandy loam, with 5 to 12 percent gravel. Reaction is slightly acid to neutral.

The Cr horizon is soft, moderately fractured granitic rock.

Use and Vegetation: Used for commercial timber production, watershed and wildlife habitat. Native vegetation is white fir, Douglas-fir, incense cedar, greenleaf manzanita, madrone, deerbrush and squaw carpet.

RUCLICK FAMILY

The Ruclick family consists of moderately deep, well drained soils that formed in materials weathered from andesitic and basaltic rock. Ruclick soils are on mountain sideslopes and lava flows on volcanic uplands. Slopes range from 0 to 30 percent. The mean annual precipitation is 9 to 12 inches and the mean annual temperature is about 41°F. Elevations are 4,200 to 5,200 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Clayey-skeletal, montmorillonitic, mesic, Aridic Argixerolls.

Typical Pedon: Ruclick family sandy loam - on a 12 percent southeast-facing slope at 4,600 feet elevation, under ponderosa pine, juniper, big sagebrush, rabbitbrush, bitterbrush, stipa, bottlebrush squirreltail and Idaho fescue. (Colors are for dry soil unless otherwise stated).

A1-0 to 2 inches; brown (10YR 5/3) sandy loam, dark brown (7.5YR 3/2) moist; moderate coarse platy structure; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine interstitial pores; 3 percent pebbles; slightly acid (pH 6.5); abrupt smooth boundary.

A2-2 to 5 inches; grayish brown (10YR 5/2) sandy loam, dark brown (7.5YR 3/2) moist; moderate very fine granular structure; slightly hard, very friable, slightly sticky and nonplastic; few very fine roots; few very fine interstitial pores; neutral (pH 7.0); clear smooth boundary.

Bt1-5 to 13 inches; grayish brown (10YR 5/2) stony sandy clay loam, dark brown (7.5YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few thin clay films on ped faces and in pores; common very fine and few fine roots; few very fine and fine tubular pores; 10 percent cobbles and 15 percent stones; neutral (pH 7.0); clear smooth boundary.

Bt2-13 to 34 inches; brown (7.5YR 4/4) very stony clay, dark brown (7.5YR 3/4) moist; moderate medium and strong fine angular blocky structure; extremely hard, firm, very sticky and very plastic; many moderately thick and thin clay films on ped faces and in pores; few very fine and fine roots; few very fine tubular pores; 10 percent cobbles and

40 percent stones; neutral (pH 7.0); abrupt smooth boundary.

R-34+ inches; hard, slightly fractured basaltic rock.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; 1 2/3 miles southeast of Cedar Mountain, 7.5 miles northeast of Tennant, 1 mile northeast of Antelope Sink, about 25 yards north of dirt road; NW 1/4 NE 1/4 Section 5, T. 44 N., R. 1 E.

Range in Characteristics: Depth to a lithic contact is 20 to 40 inches. Mean annual soil temperature is 45 to 60°F.; mean January soil temperature is 32 to 47°F.; and mean July soil temperature is 54 to 72°F. The soil temperature exceeds 41°F. from April 1 to November 25 and exceeds 47°F. from May 1 to November 1. The soil between a depth of 8 and 20 inches is dry in all parts from June 10 to October 15. The mollic epipedon is 10 to 17 inches thick. Base saturation is greater than 75 percent throughout the upper 30 inches and greater than 50 percent below.

The A horizon is grayish brown or brown (10YR 5/2, 5/3). Moist colors are very dark brown, very dark grayish brown or dark brown (10YR 2/2, 3/2; 7.5YR 3/2). It is loam or sandy loam with 8 to 20 percent clay and 0 to 5 percent gravel. Reaction is strongly acid to neutral.

The Bt horizon is dark brown, grayish brown, brown or yellowish brown (7.5YR 4/4; 10YR 4/3, 5/2, 5/3, 5/4). Moist colors are very dark grayish brown, dark yellowish brown, or dark brown (10YR 3/2, 3/4, 3/3; 7.5YR 3/2, 3/4). It is sandy loam, very cobbly to extremely cobbly clay loam, extremely stony clay loam, stony sandy clay loam, extremely cobbly clay or very stony clay with 18 to 45 percent clay and 5 to 80 percent gravel, cobbles and stones. The weighted average of the family control section is greater than 35 percent clay and greater than 35 percent gravel, cobbles and stones. Reaction is slightly acid to neutral.

Use and Vegetation: Used mainly as rangeland and wildlife habitat with some timber production. Native vegetation includes ponderosa pine, mountain mahogany, juniper, big sagebrush, rabbitbrush, bitterbrush, stipa, bottlebrush squirreltail and Idaho fescue.

SHELD FAMILY

The Sheld family consists of moderately deep and deep, well drained soils formed from volcanic ash deposits over material weathered from tuff, tuff breccia or extrusive igneous rock. These soils are on mountain sideslopes and volcanic uplands. Slopes range from 15 to 70 percent. The mean annual precipitation is 20 to 40 inches and the mean annual temperature is about 41°F. Elevations are 5,000 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Medial-skeletal, frigid Andic Xerum-brepts.

Typical Pedon: Sheld family sandy loam - on an 18 percent west-facing slope at 6,200 feet elevation, under a cover of white fir, red fir and lodgepole pine. (Colors are for dry soil unless otherwise stated).

O-1 to 0 inches; matted, fresh and partially decomposed conifer needles and twigs.

A1-0 to 2 inches; brown (10YR 4/3) sandy loam, dark reddish brown (5YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; 10 percent pebbles; few very fine and fine roots; common very fine, fine, and medium interstitial pores; strongly acid (pH 5.5); clear smooth boundary.

A2-2 to 11 inches; brown (10YR 4/3) fine sandy loam, dark reddish brown (5YR 3/2) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; 12 percent pebbles; 5 percent cobbles, and 15 percent stones; few very fine and coarse, and common fine and medium roots; few very fine and fine tubular pores; medium acid (pH 6.0); clear wavy boundary.

Bw1-11 to 21 inches; reddish brown (5YR 5/3) very stony fine sandy loam, dark reddish brown (5YR 3/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; 12 percent pebbles, 15 percent cobbles, and 30 percent stones; few very fine and fine, and common medium and coarse roots; few very fine tubular pores; slightly acid (pH 6.5); gradual wavy boundary.

Bw2-21 to 34 inches; reddish brown (5YR 5/3) very cobbly fine sandy loam, dark reddish brown (5YR 3/3) moist; moderate fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; 20 percent pebbles; 20 percent cobbles, and 5 percent stones; few very fine, fine, and coarse,

and common medium roots; few very fine tubular and interstitial pores; slightly acid (pH 6.5); clear irregular boundary.

Cr-34 to 48+ inches; weathered andesite.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; NW 1/4 NE 1/4 Section 15, T. 46 N., R. 3 W.

Range in Characteristics: The volcanic ash mantle is 20 to 40 inches thick. Depth to a paralithic contact of weathered basalt is 20 to 60 inches. The mean annual soil temperature is 42 to 47°F. The soil temperature exceeds 41°F. from May 1 to November 10 and exceeds 47°F. from June 1 to October 20. The soil is dry in the 8 to 24 inch control section from mid-July to mid-October and is moist in some or all parts the rest of the year. Base saturation is assumed to be less than 50 percent in the epipedon as indicated by adjacent lab data.

The A horizon is reddish brown, brown, dark yellowish brown, yellowish brown, or grayish brown (5YR 5/3; 7.5YR 4/4, 5/4; 10YR 4/2, 4/3, 4/4, 5/2, 5/3, 5/4). Moist colors are dark reddish brown, black, very dark brown, very dark grayish brown, or dark brown (5YR 3/2, 3/3; 10YR 2/1, 2/2, 3/2, 3/3). It is a loam, sandy loam, fine sandy loam or loamy sand and may be gravelly, very gravelly, cobbly or very cobbly. There are 5 to 30 percent gravels, 5 to 20 percent cobbles, and 0 to 15 percent stones present. Reaction is strongly acid to neutral.

The Bw horizon is weak red, reddish brown, brown, yellowish red, or pale brown (2.5 YR 5/2, 5/4; 5YR 5/3, 5/4; 7.5YR 5/2, 5/4; 10YR 5/3, 5/4, 6/3). Moist colors are dusky red, dark reddish brown, dark brown, very dark grayish brown, or dark yellowish brown (2.5YR 3/2, 3/4; 5YR 3/3, 3/4; 7.5YR 3/2, 3/4, 4/4; 10YR 3/2, 3/3, 3/4, 4/3, 4/4). It is fine sandy loam or loamy sand and is either gravelly, very gravelly, very cobbly or very stony. There are 20 to 55 percent gravels, 10 to 35 percent cobbles and 5 to 30 percent stones present. Reaction is medium acid to mildly alkaline.

The C horizon, if present, is pinkish gray or pale brown (7.5 YR 6/2; 10YR 6/3). Moist colors are reddish brown or dark brown (5YR 4/3; 7.5YR 4/2; 10YR 3/3, 4/3). It is a very cobbly loam, very cobbly sandy loam or very cobbly loamy sand. There are 10 to 20 percent gravels, 35 to 50 percent cobbles and 0 to 10 percent stones present. Reaction is neutral.

Use and Vegetation: Used mainly for timber. Native vegetation is mainly white fir, with red fir, ponderosa pine, Douglas-fir, incense cedar, snowbrush, wild currant, mountain mahogany, chinquapin, squaw carpet,

manzanita, dryland sedge, threadleaf sedge and bottlebrush squirreltail.

SKALAN FAMILY

The Skalan family consists of moderately deep, deep or very deep, well drained soils that formed in residuum and landslide material from metamorphic and mafic plutonic rocks. They occur on mountain sideslopes and landslide deposits. Slopes range from 15 to 70 percent. The mean annual precipitation is 25 to 65 inches and the mean annual temperature is about 50°F. Elevations are 1,500 to 5,200 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, mixed, mesic Ultic Haploxeralfs.

Typical Pedon: Skalan family very gravelly loam - on a 70 percent north-facing slope at 1,600 feet elevation, under a mixed conifer forest. (Colors are for dry soil unless otherwise noted).

O-1/2 to 0 inch; loose broad leaves and conifer needles.

A-0 to 1 inch; brown (7.5YR 5/4) very gravelly loam, dark reddish brown (5YR 3/4) moist; strong very fine crumb structure; soft, very friable, slightly sticky and nonplastic; medium acid (pH 6.0); abrupt smooth boundary.

AB-1 to 5 inches; light brown (7.5YR 6/4) very gravelly loam, dark reddish brown (5YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; strongly acid (pH 5.5); clear smooth boundary.

Bt1-5 to 11 inches; light reddish brown (5YR 6/4) very gravelly loam, reddish brown (5YR 4/4) moist; weak medium subangular blocky structure; hard, friable, sticky and slightly plastic; common thin clay films on pedfaces; common fine roots; slightly acid (pH 6.1); clear smooth boundary.

Bt2-11 to 18 inches; light reddish brown (5YR 6/4) very gravelly clay loam, reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; many thin clay films on ped faces; common fine and medium roots; medium acid (pH 6.0); gradual smooth boundary.

Bt3-18 to 26 inches; light brown (7.5YR 6/4) very gravelly loam, brown (7.5YR 5/4) moist; weak medium subangular blocky structure; hard, friable, sticky and slightly plastic; common moderately thick clay films on ped faces; common medium roots; medium acid (pH 6.0); gradual smooth boundary.

C-26 to 32 inches; light yellowish brown (10YR 6/4) very

gravelly loam, yellowish brown (10YR 5/4) moist; massive; slightly sticky and slightly plastic; medium acid (pH 5.9); abrupt irregular boundary.

R-32+ inches; fractured, weathered gabbro bedrock.

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; along Clear Creek about 7 miles upstream from its confluence with the Klamath River; SE 1/4 Section 32, T. 16 N., R. 6 E., Humboldt Base Meridian.

Range in Characteristics: Skalan family soils are 20 to 60+ inches deep. The mean annual soil temperature is 47 to 59° F. The mean January soil temperature is 35 to 45° F.; the mean July soil temperature is 55 to 73° F. The soil temperature at a depth of 20 inches exceeds 41° F. from February 20 through mid-December and exceeds 47° F. from mid-March through November 15. The soil is dry between the depths of 4 and 12 inches from mid-July until mid-October in most years and is moist in some or all parts the remainder of the year. In the upper 30 inches base saturation is less than 75 percent in some part.

The A horizons are reddish brown, brown, light brown, very dark grayish brown, dark brown, dark grayish brown, grayish brown, yellowish brown, pale brown, and light yellowish brown (5YR 4/4; 7.5YR 4/2, 4/4, 5/4, 6/4; 10YR 3/2, 3/3, 4/2, 4/3, 5/2, 5/3, 5/4, 5/6, 6/3, 6/4). The moist colors are dusky red, dark reddish brown, dark brown, brown, very dark gray, very dark grayish brown, and dark yellowish brown (2.5YR 4/4; 5YR 3/3, 3/4; 7.5YR 3/2, 3/4, 4/2, 4/4; 10YR 2/1, 3/1, 3/2, 3/3, 3/4, 4/3.). Textures are either loam or sandy loam, and may be gravelly or very gravelly, with 15 to 80 percent gravel and less than 10 percent cobbles. Reaction is medium acid to neutral.

The Bt horizons are yellowish red, light brown, brown, reddish yellow, light yellowish brown, pale brown, light brownish gray, brownish yellow, and very pale brown (5YR 5/8, 6/4, 6/6; 7.5 YR 5/4, 6/4, 6/6; 10YR 5/3, 5/4, 6/2, 6/3, 6/4, 6/6, 7/4; 2.5Y 6/2, 6/4). The moist colors are dark red, red, reddish brown, brown, dark brown, strong brown, dark yellowish brown, dark grayish brown, olive brown, or light olive brown (2.5YR 3/6, 4/6; 5YR 4/4, 4/5; 7.5YR 4/4, 4/6, 5/4; 10YR 4/3, 4/4, 5/4, 5/6; 2.5Y 4/2, 4/4, 5/4). Textures are gravelly or very gravelly, and are sandy loam, loam, clay loam, or sandy clay loam. There are 25 to 70 percent gravels, with a weighted average of 35 percent. Cobbles and stones, if present, are between 5 and 25 percent. Reaction is medium acid to neutral.

The C horizon is brown, strong brown, light brown, reddish yellow, yellowish brown, pale brown, light yellowish brown, brownish yellow, light brownish gray, and pale yellow (7.5YR 5/4, 5/6, 5/8, 6/4, 6/6; 10YR 5/3, 5/4, 6/3, 6/4, 6/6; 2.5Y 6/2, 6/4, 7/4). Moist colors are brown, strong brown, yellowish brown, light olive brown, and light yellowish brown (7.5YR 4/4, 4/6, 5/4, 5/6; 10YR 4/3, 5/3, 5/4, 5/6; 2.5Y 5/4, 6/4). Textures are very gravelly to extremely gravelly loamy sand, sandy loam, loam, clay loam, or sandy clay loam. There are 35 to 80 percent gravel and 5 to 25 percent cobbles and stones. Reaction is medium acid to neutral.

Use and Vegetation: Used primarily for timber production, wildlife, and watershed. The native vegetation is Douglas-fir, ponderosa pine, white fir, tanoak, incense cedar, sugar pine, black oak, madrone, white oak, canyon live oak, big leaf maple, deerbrush, whiteleaf manzanita, pinemat manzanita, snowberry, vetch, Idaho fescue, stipa, bottlebrush squirreltail, bracken fern, bush chinquapin, mountain mahogany, Oregon grape, twin-flower, buckbrush, modesty flower, greenleaf manzanita, sword fern, poison oak, thimbleberry, yerba santa and berberis.

SMARTS FAMILY

The Smarts family consists of deep or very deep, well drained soils that formed in material weathered from tuff, basalt or andesite. Smarts family soils are on volcanic mountain sideslopes and upland lava flows. Slopes range from 30 to 50 percent. The mean annual precipitation is 20 to 40 inches and the mean annual air temperature is about 42° F. Elevations are 4,500 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid Pachic Ultic Argixerolls.

Typical Pedon: Smarts family loam - on a 30 percent west-facing slope at 4,600 feet elevation, under a mixed conifer forest. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches; matted conifer needles and twigs.

A-0 to 2 inches; dark yellowish brown (10YR 4/4) loam, very dark brown (10YR 2/2) moist; moderate very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine interstitial pores; medium acid (pH 6.0); abrupt smooth boundary.

Bt1-2 to 7 inches; brown (7.5YR 5/4) very cobbly clay loam, dark brown (7.5YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few thin clay films on ped faces and in pores; common very fine roots; few very fine tubular pores; 30 percent cobbles and 10 percent pebbles; slightly acid (pH 6.5); clear smooth boundary.

Bt2-7 to 15 inches; brown (7.5YR 5/4) very cobbly clay loam, dark brown (7.5YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common thin clay films on ped faces and in pores; common fine and medium roots; common very fine tubular pores, 30 percent cobbles and 15 percent pebbles; neutral (pH 7.0); clear smooth boundary.

Bt3-15 to 44 inches plus; brown (7.5YR 4/4) very cobbly clay loam, dark reddish brown (5YR 3/3) moist; moderate medium subangular blocky struc-

ture; hard, friable, sticky and plastic; few thin clay films on ped faces and in pores; few fine roots; few very fine tubular pores; 30 percent cobbles and 15 percent pebbles; neutral (pH 7.0).

R-44+ inches; hard, moderately fractured basalt.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; about 5 miles northwest of Lodgepole Guard Station, 1 mile east of Bogus Creek, in Flat Springs Canyon on a 90 degree northeast turn in Bogus dirt road; SW 1/4 NE 1/2 Section 28, T. 47 N., R. 4 W.

Range in Characteristics: Depth to a lithic contact is 40 to 60+ inches. Mean annual soil temperature is 39 to 46° F.; mean January soil temperature is 32 to 36° F.; mean July temperature is 47 to 57° F. The soil temperature exceeds 41° F. from May 15 to October 25 and exceeds 47°F. from June 15 to October 1. The soil between a depth of 6 and 16 inches is dry in all parts from August 1 to October 15. The mollic epipedon is greater than 20 inches thick. The base saturation is between 50 and 75 percent in the upper 30 inches of soil and greater than 50 percent below.

The A horizon is grayish brown, brown or dark yellowish brown (10YR 4/4, 5/2, 5/3). Moist colors are dark brown, very dark grayish brown or very dark brown (10YR 2/2, 3/2, 3/3). It is loam with 12 to 20 percent clay and 0 to 15 percent coarse fragments. Reaction is medium to slightly acid.

The Bt horizon is brown or dark brown (7.5YR 4/4, 5/4). Moist colors are dark brown or dark reddish brown (7.5YR 3/2, 3/4; 5YR 3/3). It is gravelly to extremely gravelly loam or cobbly to very cobbly clay loam with 24 to 34 percent clay and 35 to 90 percent rock fragments. The weighted average of coarse fragments in the family control section is greater than 35 percent. Reaction is slightly acid to mildly alkaline.

Use and Vegetation: Used mainly for timber and wildlife habitat. Native vegetation includes ponderosa pine, Douglas-fir, incense cedar, white fir, red fir, snowberry, deerbrush, lupine, squaw carpet, forbs, bottlebrush squirreltail, Idaho fescue and other grasses.

STONEWELL FAMILY

The Stonewell family consists of very deep, excessively drained soils forming in recent pyroclastic materials. These soils are on volcanic uplands. Slopes range from 2 to 9 percent. The mean annual precipitation is 20 to 40 inches and mean annual temperature is about 40° F. Elevations are 5,400 to 6,700 feet. The climate is moderate summer mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Cindery, frigid, Dystric Xerorthents.

Typical Pedon: Stonewell family very gravelly loamy coarse sand - on a 5 percent south-facing slope at 5,900 feet elevation, under lodgepole pine and currant. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches, fresh and partially decomposed pine needles and twigs.

A-0 to 4 inches; light grayish brown (10YR 6/2) very gravelly loamy coarse sand, dark grayish brown (10YR 4/2) moist; single grained; loose, loose, nonsticky and nonplastic; common very fine, fine, medium and coarse roots; many fine, medium and coarse pores; 40 percent pumice pebbles; strongly acid (pH 5.5); clear smooth boundary.

C1-4 to 15 inches; light gray (10YR 7/2) very gravelly loamy coarse sand, grayish brown (10YR 5/2) moist; single grained; loose, loose, nonsticky and nonplastic; common fine and few medium roots; many fine, medium and coarse pores; 50 percent pumice pebbles; medium acid (pH 6.0); gradual wavy boundary.

C2-15 to 36 inches; light gray (10YR 7/2) extremely gravelly loamy coarse sand, grayish brown (10 YR 5/2) moist; single grained; loose, loose, nonsticky and non-plastic; few fine roots; many fine, medium and coarse pores; 80 percent pumice pebbles; slightly acid (pH 6.5); gradual wavy boundary.

C3-36 to 60 inches; light gray (10YR 7/2) extremely gravelly loamy coarse sand, grayish brown (10YR 5/2) moist; single grained; loose, loose, nonsticky and nonplastic; few fine roots; many few, medium and coarse pores; 60 percent pumice pebbles; slightly acid (pH 6.5); abrupt smooth boundary.

2C4-60+ inches; black; slightly cemented layer of cinders.

Note: Between, and within, most of the C horizons are numerous thin dark bands or layers (1/4 to 1 1/2 inches thick). These are high in pumice gravels and appear to be thin buried A horizons or thin dark ash layers.

Type Location: McCloud District, Shasta-Trinity National Forest; Siskiyou County, California; about 1 mile south of Pumicestone Well, 1 mile southwest of Little Glass Mountain and 1/2 mile north east of Paint Pot Crater; in road cut at a culvert passing under the road; SE 1/4 NE 1/4 Section 23, T. 43 N., R. 2 E.

Range in Characteristics: Depth to a lithic contact is greater than 60 inches. Mean annual soil temperature is 39 to 44° F.; mean January soil temperature is 32 to 35° F.; and mean July soil temperature is 47 to 54° F. The soil temperature exceeds 41° F. from April 25 to November 20 and exceeds 47° F. from June 1 to October 20. The soil between a depth of 18 to 53 inches is dry throughout from August 1 to October 15 in most years and is moist in some or all parts the rest of the year.

The A horizon is grayish brown, brown or light brownish gray (10YR 5/2, 5/3, 6/2). Moist colors are very dark grayish brown, dark brown or dark grayish brown (10YR 3/2, 3/3, 4/2). It is very gravelly to extremely gravelly loamy coarse sand or very gravelly to extremely gravelly coarse sand with 0.5 to 8 percent clay and 35 to 70 percent pumice gravel. Reaction is strongly to medium acid.

The C horizon is composed of stratified layers of ash and pumice. It is primarily light gray (10YR 7/2). Moist color is grayish brown (10YR 5/2). Other colors are light gray and white (10YR 6/1, 7/1, 8/1, 8/2). Moist colors are black to pale brown (10YR 2/1, 3/1, 3/2, 4/3, 5/3, 6/2, 6/3). It is very gravelly to extremely gravelly loamy coarse sand or very gravelly to extremely gravelly coarse sand with 0.5 to 8 percent clay and 40 to 90 percent pumice gravel. Reaction is strongly to slightly acid.

The 2C horizon is deeper than 40 inches and usually deeper than 60 inches. It is brown, yellowish brown or pale brown (10YR 5/3, 5/4, 6/3). Moist colors are dark brown or dark yellowish brown (10YR 3/3, 3/4, 4/4).

Textures are sandy loam, gravelly sandy loam, or very cobbly to extremely cobbly sandy loam with 10 to 20 percent clay and 12 to 75 percent gravel, cobbles and stones. Reaction is medium acid to neutral.

Use and Vegetation: Used mainly as wildlife habitat

with some timber production (primarily firewood or pulpwood). Native vegetation is lodgepole pine, currant, and few white fir, red fir, sedges, pinemat and greenleaf manzanita, snowbrush, rabbitbrush, bitterbrush, squaw carpet, stipa and bottlebrush squirreltail.

TALLAC FAMILY

The Tallac family consists of moderately deep and deep, well drained soils that formed in residuum from granitic and metamorphic rocks. These soils occur on mountain sideslopes, ground moraines and ridges. Slopes range from 9 to 50 percent. The mean annual precipitation is 40 to 90 inches and the mean annual air temperature is about 42° F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid Pachic Xerumbrepts.

Typical Pedon: Tallac family loam - on a 40 percent southeast-facing slope at 5,600 feet elevation, under a cover of white fir, other mixed conifers, tree chinquapin, greenleaf manzanita and snowbrush. (Colors are for dry soil unless otherwise stated).

O-1/2 to 0 inches; matted decomposed conifer needles and twigs.

A-0 to 3 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; 5 percent pebbles; medium acid (pH 5.7); clear smooth boundary.

Bw1-3 to 10 inches; dark brown (10YR 4/3) sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and coarse roots; common very fine and fine interstitial pores; 10 percent pebbles; slightly acid (pH 6.5); gradual smooth boundary.

Bw2-10 to 15 inches; dark grayish brown (10YR 4/2) gravelly sandy loam, very dark brown (10YR 2/2) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and coarse roots; common fine interstitial pores; 15 percent pebbles and 10 percent cobbles; neutral (pH 6.7); clear wavy boundary.

BC-15 to 25 inches; dark grayish brown (10YR 4/2) very cobbly sandy loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; 30 percent pebbles and 30 percent cobbles;

medium acid (pH 6.0); clear irregular boundary.

R-25+ inches; hard, fractured bedrock.

Type Location: Oak Knoll District, Klamath National Forest; Jackson County, Oregon; 3 miles southeast of Mt. Ashland; NE 1/4 NE 1/4 Section 27, T. 40 S., R. 1 E.

Range in Characteristics: Tallac family soils are 20 to 60 inches deep. The mean annual soil temperature is 36 to 46° F.; mean January soil temperature is 30 to 35° F.; mean July soil temperature is 46 to 56° F. The soil temperature at a depth of 20 inches exceeds 41° F. from April 15 to November 20, and exceeds 47° F. from May 20 to October 15. The soil is dry between the depth of 12 to 24 inches from mid-July to mid-October and is moist in some or all parts the remainder of the year. The base saturation is assumed to be less than 50 percent throughout the soil.

The A horizon is very dark grayish brown, dark brown, dark grayish brown, grayish brown or brown (10YR 3/2, 3/3, 4/2, 4/3, 5/2, 5/3) dry, black, very dark brown, very dark gray or very dark grayish brown (10YR 2/1, 2/2, 3/1, 3/2) moist. It is a loam, sandy loam, gravelly to very gravelly loam, or cobbly to very cobbly loam with 5 to 37 percent coarse fragments. Reaction is very strongly acid to neutral.

The Bw horizon is dark grayish brown, brown, grayish brown, or olive (10YR 4/2, 4/3, 5/3; 2.5Y 5/2; 5Y 5/3) dry, very dark brown, very dark gray, very dark grayish brown, dark brown, or dark yellowish brown (10YR 2/2, 3/1, 3/2, 3/3, 3/4, 4/4) moist. It is a loam, sandy loam, gravelly sandy loam, very gravelly sandy loam or very cobbly sandy loam, with 15 to 75 percent coarse fragments. Clay content is 15 to 18 percent. Reaction is strongly acid to neutral.

The C horizon, when present, is yellowish brown, grayish brown, light brownish gray, olive gray, light olive brown, light yellowish brown, or olive (10YR 5/4; 2.5Y 5/2, 5/4, 6/2, 6/4; 5Y 5/2, 5/3) dry, and very dark gray, very dark grayish brown, dark grayish brown, or olive gray (10YR 3/1, 3/2; 2.5YR 4/2; 5Y 3/1, 4/2) moist. It is very gravelly loam or extremely cobbly loam with 50 to 80 percent coarse fragments. The family control section has greater than 30 percent coarse fragments. Reaction is strongly acid to neutral.

Use and Vegetation: These soils are primarily used for woodland, wildlife habitat and recreation. Native vegetation consists of red fir, ponderosa pine, sugar pine, white fir, incense cedar, Douglas-fir, pinemat manzanita,

squaw carpet, greenleaf manzanita, snowbrush, currant, snowberry, bush chinquapin, alders, willows, lupine, bedstraw and grasses.

TANGLE FAMILY

The Tangle family consists of deep well drained residual soils formed from ultramafic rocks. These soils occur on mountain sideslopes and landslide benches. Slopes range from 15 to 50 percent. The mean annual precipitation is 45 to 60 inches and the mean annual temperature is about 41° F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Clayey-skeletal, serpentinitic, frigid Mollic Palexeralfs.

Typical Pedon: Tangle family very gravelly sandy loam - on a 25 percent concave northeast-facing slope at 5,200 feet elevation, under a Jeffrey pine - incense cedar stand. (Colors are for dry soil unless otherwise stated).

Oi-2 to 1 inches; fresh pine needles and twigs.

Oe-1 to 0 inches; decomposed pine needles.

A1-0 to 1 inches; dark brown (7.5yr 4/3) very gravelly sandy loam, dark reddish brown (5yr 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; 40 percent pebbles; medium acid (pH 6.0); clear smooth boundary.

A2-1 to 6 inches; brown (7.5YR 5/4) very gravelly sandy loam, dark reddish brown (5YR 3/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine, few fine, and common medium roots; few fine and common very fine tubular and interstitial pores; 30 percent pebbles and 5 percent cobbles; slightly acid (pH 6.4); abrupt wavy boundary.

Bt1-6 to 16 inches; pale brown (10YR 6/3) very cobbly sandy loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few very fine, and common fine, medium, and coarse roots; common very fine and fine tubular and interstitial pores; few thin clay films in pores and as bridges; 35 percent pebbles and 25 percent cobbles; slightly acid (pH 6.4); clear wavy boundary.

Bt2-16 to 28 inches; yellowish brown (10YR 5/4) very cobbly clay, brown (10yr 4/3) moist; strong medium subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine, common medium and coarse roots; few fine tubular pores; many moderately thick clay films on ped faces and in

pores; 20 percent pebbles and 30 percent cobbles; slightly acid (pH 6.4); abrupt smooth boundary.

Bt3-28 to 43 inches; yellowish brown (10YR 5/4) very stony clay loam, dark yellowish brown (10YR 4/4) moist; strong fine angular blocky structure, slightly hard, friable, very sticky and very plastic; few very fine and coarse roots; few very fine tubular pores; continuous thick clay films on ped faces and in pores; 5 percent pebbles, 15 percent cobbles and 25 percent stones; slightly acid (pH 6.5); gradual wavy boundary.

Bt4-43 to 57 inches; dark yellowish brown (10YR 4/6) cobbly sandy clay loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; slightly hard, friable, sticky and plastic; few very fine and fine roots; few very fine tubular pores; many thick clay films on ped faces, in pores, and as bridges; 10 percent pebbles, 15 percent cobbles and 5 percent stones; slightly acid (pH 6.5); abrupt wavy boundary.

R-57+ inches; hard, highly fractured serpentinitized peridotite.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; 0.5 miles off Road 41N08 to Rock Fence Lake, about 100 yards before meadow on landslide bench below road; SE 1/4 SE 1/4 NE 1/4 Section 24, T. 41 N., R. 7 W.

Range in Characteristics: The soil is 40 to 60 inches deep to hard, fractured bedrock. The mean annual soil temperature is 38 to 46°F.; the mean January soil temperature is 30° to 35°F.; the mean July soil temperature is 45 to 55°F. The soil temperature exceeds 41°F. from April 15 to November 20, and is greater than 47°F. from May 20 to October 20. The soil between the depths of 16 to 25 inches is dry in all parts from August 1 to October 15, and moist in some or all parts the rest of the year. The soil is medium to slightly acid. Throughout the whole soil, those particles less than 2mm in diameter contain greater than 40 percent (by weight) serpentine minerals.

The A horizon is brown (7.5YR 4/3, 4/4, 5/4). Moist color is dark reddish brown (5YR 3/2, 3/3, 3/4). It is very gravelly sandy loam or loam, with 30 to 45 percent gravel and 5 to 15 percent cobbles. Reaction is medium acid to neutral.

The Bt horizon is brown, strong brown, yellowish brown, or pale brown (10YR 4/6, 5/4, 6/3; 7.5YR 5/4, 5/6).

Moist colors are brown, dark yellowish brown, or dark brown (10YR 4/3, 4/4; 7.5YR 3/4, 4/4). It is very cobbly or very gravelly sandy loam, clay loam or clay in the upper Bt, and very stony or very cobbly clay loam or sandy clay loam in the lower Bt. There are 5 to 20 percent gravel, and 30 to 40 percent cobbles and stones. The weighted average of the family control section is greater than 35 percent clay. Reaction is slightly acid to neutral.

The R horizon is hard, highly fractured serpentized ultramafic rock. Some soil or saprolite may be present in fractures.

Use and Vegetation: Used for watershed, wildlife habitat, and timber production. The native vegetation includes Jeffrey pine, huckleberry oak, incense cedar and beargrass.

TEEWINOT FAMILY

The Teewinot family consists of very shallow or shallow, excessively drained residual soils formed from metamorphic, mafic plutonic or granitic parent material. These soils occur on mountain sideslopes and ridges. Slopes range from 50 to 90 percent. The mean annual precipitation is 60 to 110 inches and the mean annual air temperature is about 38°F. Elevations are greater than 6,200 feet. The climate is high elevation mediterranean, with warm dry summers and cold snowy winters.

Taxonomic Class: Loamy-skeletal, mixed Lithic Cryumbrepts.

Typical Pedon: Teewinot family extremely gravelly loam - on a 21 percent west-facing slope at 6,700 feet elevation, under a cover of mountain hemlock, red fir, western white pine, penstemon and beargrass. (Colors are for dry soil unless otherwise stated.)

O-1/2 to 0 inches; loose conifer needles and other litter.

A1-0 to 1 inches; very dark gray (10YR 3/1) extremely gravelly loam, black (10YR 2/1) moist; weak very fine granular structure; soft, very friable, slightly sticky and nonplastic; few roots; very strongly acid (pH 4.8); clear smooth boundary.

A2-1 to 4 inches; very dark grayish brown (10YR 3/2) very gravelly loam, black (10YR 2/1) moist; moderate very fine granular structure; soft, very friable, slightly sticky and nonplastic; abundant roots; strongly acid (pH 5.2); clear smooth boundary.

A3-4 to 9 inches; dark brown (10YR 3/3) extremely gravelly loam, very dark brown (10YR 2/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and slightly plastic, com-

mon roots; medium acid (pH 5.6); abrupt irregular boundary.

R-9+ inches; highly fractured bedrock.

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; 0.2 miles southwest of Preston Peak; Section 27, T. 17 N., R. 5 E.

Range in Characteristics: The soil is less than 20 inches deep in metamorphic, mafic plutonic or granitic bedrock. The mean annual soil temperature is 32 to 46°F.; the mean summer soil temperature is 40 to 46°F. where an O horizon is present, and 50 to 55°F. where no O horizon is present. The soil temperature exceeds 41°F. from May 15 to November 10, and is greater than 47°F. from July 1 to October 10. The soil between the depths of 9 and 20 inches is dry in all parts from August 10 to October 10.

The A horizon is very dark gray, very dark grayish brown, dark brown, dark grayish brown, dark yellowish brown, brown, or yellowish brown (10YR 3/1, 3/2, 3/3, 4/2, 4/3, 4/4). Moist colors are black, very dark brown, very dark gray, very dark grayish brown, or dark brown (10YR 2/1, 2/2, 3/1, 3/2, 3/3). It is very gravelly to extremely gravelly loam or sandy loam with 25 to 70 percent gravels and 10 to 30 percent cobbles. Reaction is medium to very strongly acid. Percent base saturation (by NH₄OAc) is assumed to be less than 50 percent.

Use and Vegetation: Used for watershed, wildlife, timber production and recreation. The native vegetation is red fir, mountain hemlock, western white pine, greenleaf and pinemat manzanita, brewer spruce, thinleaf huckleberry, phlox, rush, penstemon, sedum, sedge, perennial bunchgrass and other forbs.

TOADLAKE FAMILY

The Toadlake family consists of deep, well drained soils formed from serpentinitic rocks. These soils occur on colluvial footslopes. Slopes range from 30 to 70 percent. The mean annual precipitation is 50 to 60 inches and the mean annual temperature is about 42° F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, serpentinitic, frigid Typic Haploxeralfs.

Typical Pedon: Toadlake family gravelly loam - on a 45 percent concave northeast-facing slope at 6,400 feet elevation, under a mixed conifer-shrub stand. (Colors are for dry soil unless otherwise stated.)

O-2 to 0 inches; matted and partially decomposed conifer needles.

A-0 to 3 inches; brown (7.5YR 5/2) gravelly loam, dark brown (7.5YR 3/2) moist; moderate fine granular structure; slightly sticky and slightly plastic; common very fine and fine roots; few thin clay films as bridges and in pores; 20 percent pebbles and 2 percent cobbles; slightly acid (pH 6.3); clear smooth boundary.

Bt1-3 to 12 inches; yellowish brown (10YR 5/4) very gravelly clay loam, dark brown (10YR 4/3) moist; weak fine and medium granular structure; slightly sticky and slightly plastic; few very fine, and common fine, medium, and coarse roots; few thin clay films as bridges and in pores; 40 percent pebbles, 10 percent cobbles and 10 percent stones; slightly acid (pH 6.5); clear wavy boundary.

Bt2-12 to 22 inches; pale brown (10YR 6/3) very gravelly clay loam, dark brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly sticky and slightly plastic, few thin and moderately thick clay films as bridges, in pores, and on ped faces; 40 percent pebbles, 2 percent cobbles and 1 percent stones; neutral (pH 7.0); clear wavy boundary.

Bt3-22 to 41 inches; light yellowish brown (10YR 6/4) very gravelly clay loam; olive brown (2.5Y 4/3) moist; moderate medium angular blocky structure; slightly sticky and slightly plastic; common fine, medium, and coarse roots; common moderately

thick clay films as bridges, in pores, and on ped faces; 40 percent pebbles, 2 percent cobbles and 1 percent stones; mildly alkaline (pH 7.5); clear wavy boundary.

R-41+ inches; hard, moderately fractured serpentinite.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; NE 1/4 SW 1/4 Section 12, T. 40 N., R. 7 W.

Range in Characteristics: The soil is 40 to 60 inches deep in weathered colluvium. The mean annual soil temperature is 35 to 46°F.; the mean January soil temperature is 30 to 35°F.; the mean July soil temperature is 45 to 55°F. The soil temperature exceeds 41°F. from April 15 to November 20 and is greater than 47°F. from May 20 to October 20. The soil between the depths of 7 and 22 inches is dry in all parts from August 1 to October 15, and moist in some or all parts the rest of the year. The soil is slightly acid to mildly alkaline.

The A horizon is brown, strong brown, or yellowish brown (7.5YR 5/2, 5/4, 5/6; 10YR 5/3, 5/4, 5/6). Moist colors are dark brown, brown, strong brown, or dark yellowish brown (7.5YR 3/2, 3/4, 4/2, 4/4; 10YR 3/3, 3/4, 4/3, 4/4). It is gravelly or very gravelly with textures of sandy loam or loam. There are 20 to 40 percent gravel and 2 to 10 percent cobbles. When the moist color value is 3.5 or less the epipedon is less than 4 inches thick. Reaction is slightly acid.

The Bt horizon is brown, light brown, yellowish brown, pale brown, or light yellowish brown (7.5YR 5/4, 6/4, 10YR 5/3, 5/4, 6/3, 6/4). Moist colors are brown, dark brown, dark yellowish brown, or olive brown (10YR 4/3, 4/4; 2.5Y 4/3, 4/4). Textures are very gravelly or gravelly loam, sandy clay loam, or clay loam, with 35 to 50 percent gravel, 2 to 15 percent cobbles and 1 to 10 percent stones. Percent base saturation is greater than 75 percent throughout the upper 30 inches of the argillic. Reaction is slightly acid to mildly alkaline.

Use and Vegetation: Used for timber production, watershed and wildlife habitat. The native vegetation includes Jeffrey pine, incense cedar, white fir, western white pine, huckleberry oak, pinemat manzanita, green-leaf manzanita and beargrass.

TROJAN FAMILY

The Trojan family consists of deep to very deep, well drained soils that formed in residuum from basaltic and andesitic rock. Trojan family soils are on volcanic upland terraces and fans. Slopes range from 2 to 9 percent. The mean annual precipitation is 15 to 25 inches and the mean annual temperature is about 44°F. Elevations are 4,600 to 5,000 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Fine-loamy, mixed, frigid Ultic Argixerolls.

Typical Pedon: Trojan family loam - on a 2 percent sloping flat at 4,880 feet elevation, under Jeffrey pine, bitterbrush, big sagebrush, rabbitbrush, curl-leaf mountain mahogany, bottlebrush squirreltail, cheatgrass, Idaho fescue, prairie junegrass and other perennial grasses and forbs. (Colors are for dry soil unless otherwise stated).

O-1/2 to 0 inches; fresh pine needles and twigs.

A1-0 to 4 inches; brown (10YR 4/3) loam, dark brown (7.5YR 3/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and few fine roots; common very fine and fine interstitial pores; 5 percent pebbles and less than 1 percent cobbles; slightly acid (pH 6.5); abrupt wavy boundary.

A2-4 to 11 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and few fine interstitial pores; 6 percent pebbles and less than 1 percent cobbles; slightly acid (pH 6.5); clear wavy boundary.

Bt1-11 to 22 inches; pale brown (10YR 6/3) loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, very friable, nonsticky and nonplastic; few thin clay films on ped faces; few very fine and coarse roots; common very fine and fine interstitial and few medium tubular pores; 5 percent pebbles and less than 1 percent cobbles; slightly acid (pH 6.5); abrupt wavy boundary.

Bt2-22 to 29 inches; yellowish brown (10YR 5/4) gravelly sandy clay loam, dark brown (7.5YR 4/4) moist; strong medium subangular and angular blocky structure; very hard, friable, slightly sticky and slightly plastic; common moderately thick clay films on ped faces, in pores and bridging; few very fine

and fine roots; few very fine and fine tubular pores; 20 percent pebbles and less than 1 percent cobbles; slightly acid (pH 6.5); clear smooth boundary.

Bt3-29 to 44 inches; brown (7.5YR 4/4) clay loam, dark brown (7.5YR 3/4) moist; strong medium angular and subangular blocky structure; very hard, friable, sticky and plastic; many moderately thick clay films on ped faces, pores and bridging; few very fine and fine roots; common very fine and fine tubular pores; 4 percent pebbles and less than 1 percent cobbles; slightly acid (pH 6.5); clear wavy boundary.

Bt4-44 to 58 inches; brown (7.5YR 5/4) sandy clay loam, dark brown (7.5YR 4/4) moist; strong medium and coarse subangular blocky structure; very hard, friable, slightly sticky and slightly plastic; many thin and moderately thick clay films on ped faces, in pores and bridging; few fine roots; few very fine and common fine tubular pores; 6 percent pebbles; neutral (pH 7.2); abrupt smooth boundary.

R-58+ inches; hard, slightly fractured basalt.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; 5 miles west-northwest of Bray, California, 5 miles northeast of Deer Mountain, 1 mile southeast of U.S. 97; approximately 50 yards north of dirt road; SE 1/4 NE 1/4 Section 15, T. 44 N., R. 2 W.

Range in Characteristics: Depth to a lithic contact is 40 to 60+ inches. Mean annual soil temperature is 45 to 47°F.; mean January soil temperature is 34 to 36°F.; and mean July soil temperature is 55 to 58°F. The soil temperature exceeds 41°F. from March 25 to November 25 and exceeds 47°F. from April 25 to November 5. The soil between the depth of 6 and 18 inches is dry in all parts from July 25 to October 20 and is moist in some or all parts the rest of the year. The mollic epipedon is 10 to 19 inches thick. Base saturation ranges from 50 to 75 percent throughout the upper 30 inches of soil and greater than 50 percent below.

The A horizon is dark grayish brown, dark brown, grayish brown, brown or yellowish brown (10YR 4/2, 4/3, 5/2, 5/3, 5/4). Moist colors are very dark brown, very dark grayish brown or dark brown (10YR 2/2, 3/2, 3/3; 7.5YR 3/2). It is loam or sandy loam with 8 to 18 percent clay and 0 to 10 percent gravel. Reaction is strongly acid to neutral.

The Bt horizon is yellowish brown, pale brown, light yellowish brown or brown (10YR 5/4, 6/3, 6/4; 7.5YR

4/4, 5/4). Moist colors are dark brown or brown (10YR 3/3, 4/3; 7.5YR 3/2, 3/4, 4/4). It is loam, sandy loam, clay loam, sandy clay loam or gravelly sandy clay loam with 18 to 28 percent clay and 0 to 25 percent gravels and cobbles. Reaction is slightly acid to mildly alkaline.

Use and Vegetation: Used for rangeland and wildlife

habitat with some timber production. Native vegetation includes ponderosa pine, Jeffrey pine, juniper, bitterbrush, big sagebrush, rabbitbrush, dwarf sagebrush, curleaf, mountain mahogany, bottlebrush squirreltail, cheatgrass, brome, Idaho fescue, prairie junegrass and other perennial grasses and forbs.

VIPONT FAMILY

The Vipont family consists of deep or very deep, well drained soils that formed in material weathered from basaltic or andesitic volcanic rocks. Vipont family soils are on volcanic mountain sideslopes. Slopes range from 15 to 50 percent. The annual precipitation is 12 to 15 inches and the mean annual temperature is about 43° F. Elevations are 4,400 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid Pachic Argixerolls.

Typical Pedon: Vipont family loam - on a 20 percent northwest-facing slope at 5,400 feet elevation under a cover of rabbitbrush, mountain mahogany, bitterbrush, juniper, ponderosa pine, Idaho fescue, cheatgrass, brome and bluegrass. (Colors are for dry soil unless otherwise stated).

A1-0 to 1 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine platy structure parting to weak very fine granular structure; soft, very friable, slightly sticky and nonplastic; 5 percent pebbles and 5 percent cobbles; slightly acid (pH 6.5); clear smooth boundary.

A2-1 to 4 inches; brown (10YR 4/3) cobbly loam, dark brown (7.5YR 3/2) moist; weak very fine subangular blocky structure parting to weak very fine granular structure; soft, very friable, slightly sticky and nonplastic; few very fine roots; few very fine interstitial pores; 5 percent pebbles and 10 percent cobbles; neutral (pH 7.0); clear smooth boundary.

A3-4 to 11 inches; brown (10YR 4/3) stony loam, very dark brown (10YR 2/2) moist; weak fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; few thin clay films on ped faces; few very fine and fine roots; few very fine interstitial pores; 5 percent pebbles, 25 percent cobbles and 15 percent stones; neutral (pH 7.0); clear smooth boundary.

A4-11 to 25 inches; brown (10YR 4/3) stony loam, dark brown (7.5YR 3/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky, and nonplastic; few thin clay films on ped faces; few very fine, fine and common medium roots; few very fine interstitial pores; 10 percent pebbles, 20 percent cobbles and 20 percent stones; neutral (pH 7.0); clear wavy boundary.

Bt1-25 to 40 inches; brown (10YR 4/3) very gravelly sandy clay loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; hard, friable, sticky and slightly plastic; many moderately thick clay films on ped faces; few very fine roots; 30 percent pebbles, 15 percent cobbles, and 10 percent stones; neutral (pH 7.0).

R-40+ inches; hard moderately fractured basaltic rock.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; about 4.5 miles northeast of Bray, California, 3/4 mile northwest of Cedar Mountain; SE 1/4 SW 1/4 Section 25, T. 45 N., R. 1 W.

Range in Characteristics: Depth to a lithic contact is 40 to 60+ inches. Mean annual soil temperature is 38 to 46° F.; mean January soil temperature is 33 to 36° F.; mean July soil temperature is 47 to 58° F. The soil temperature exceeds 41° F. from April 10 to November 20 and exceeds 47° F. from May 15 to October 25. The soil between a depth of 8 and 25 inches is dry in all parts from August 1 to October 15 in most years and is moist in some or all parts the rest of the year. The mollic epipedon is greater than 20 inches thick. Base saturation is greater than 75 percent throughout the upper 30 inches of the soil and greater than 50 percent below.

The A horizon is grayish brown or brown (10YR 5/2, 5/3, 4/3). Moist colors are very dark brown, very dark grayish brown, or dark brown (10YR 2/2, 3/2, 3/3; 7.5YR 3/2). It is loam, gravelly loam, cobbly loam or stony loam with 13 to 18 percent clay and 10 to 50 percent rock fragments. Reaction is slightly acid to neutral.

The Bt horizon is brown (10YR 4/3, 5/3). Moist colors are very dark grayish brown or dark brown (10YR 3/2, 3/3). It is very gravelly to extremely gravelly, very cobbly to extremely cobbly or very stony to extremely stony sandy clay loam, loam or clay loam, with 25 to 35 percent clay and 50 to 75 percent gravel, cobbles and stones. Reaction is neutral.

Use and Vegetation: Used mainly as rangeland and wildlife habitat with some timber production. Native vegetation includes greenleaf manzanita, bitterbrush, mountain mahogany, rabbitbrush, ponderosa pine, juniper, incense cedar, cheatgrass, brome, bottlebrush squirreltail, bluebunch wheatgrass, stipa, poas and fescue.

WASHOE FAMILY

The Washoe family soils consist of deep and very deep, well drained soils that formed in residuum and colluvium. These soils occur on terraces, mountain footslopes and glacial outwash deposits. Slopes range from 0 to 5 percent. The mean annual precipitation is 9 to 12 inches and the mean annual temperature is 49°F. Elevations are 4,400 to 4,800 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, mixed, mesic Xerollic Haplargids.

Typical Pedon: Washoe family loam - on a 2 percent slope at 4,500 feet elevation. (Colors are for dry soil unless otherwise noted).

O-1 to 0 inches; new to partially decomposed needles, twigs and leaves.

A1-0 to 4 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; massive; loose, loose, slightly sticky and slightly plastic; many very fine roots; slightly acid (pH 6.5); clear smooth boundary.

A2-4 to 14 inches; pale brown (10YR 6/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; few very fine, fine and coarse roots; many very fine interstitial pores; slightly acid (pH 6.5); clear wavy boundary.

Bt-14 to 36 inches; pinkish gray (7.5YR 6/2) very gravelly sandy clay loam, brown and dark brown (7.5YR 4/4) moist; moderate fine subangular blocky structure; hard, firm, slightly sticky and slightly plastic; continuous moderately thick clay films on ped faces, pores and as bridges; few fine and medium roots; many very fine interstitial pores; 60 percent pebbles and 10 percent cobbles; slightly acid (pH 6.5).

C-36+ inches; profile continues in deep (>60 inches) alluvium.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; Section 12, T. 44 N., R. 1 W.

Range in Characteristics: Depth to a lithic or paralithic contact is 40 to 60+ inches. The mean annual soil temperature is 47 to 59° F.; the mean January soil temperature is 35 to 45° F.; the mean July soil temperature is 55 to 70° F. The soil temperature exceeds 41° F. from March 25 to November 20 and exceed 47° F. from April 15 to November 1. The soil is dry in all parts between the depths of 4 to 12 inches from June 10 to November 10.

The A horizons are dark grayish brown, brown, dark brown, grayish brown, or pale brown (10YR 4/2, 4/3, 5/2, 5/3, 6/3) dry. Moist colors are dark brown, very dark brown or very dark grayish brown (7.5YR 3/2; 10YR 2/2, 3/2). It is loam or sandy loam. Reaction is medium acid to neutral.

The Bt horizon is pinkish gray, very pale brown, light yellowish brown or yellowish brown (7.5YR 6/2; 10YR 5/4, 6/4, 7/4) dry. Moist colors are brown, dark brown or dark yellowish brown (7.5YR 3/4, 4/4; 10YR 3/4, 4/3). It is very gravelly sandy clay loam, very gravelly clay loam or very gravelly sandy loam. Rock fragments are 35 to 70 percent by volume. Reaction is slightly acid to neutral.

Use and Vegetation: These soils are used primarily for woodland and grazing. They also provide wildlife habitat and recreation. Native vegetation consists of ponderosa pine, incense cedar, mountain mahogany, western juniper, bottlebrush squirreltail, cheatgrass, rubber rabbitbrush, big sagebrush and dwarf sagebrush.

WEITCHPEC FAMILY

The Weitchpec family consists of moderately deep, well drained residual soils formed from serpentinitic rocks. These soils occur on mountain sideslopes. Slopes range from 30 to 70 percent. The mean annual precipitation is 30 to 70 inches and the mean annual temperature is about 50° F. Elevations are 2,000 to 5,200 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, serpentinitic, mesic Typic Xerochrepts.

Typical Pedon: Weitchpec family very gravelly loam - on a 45 percent convex south-facing slope at 3,550 feet elevation, under a mixed conifer-huckleberry oak cover. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches; loose fresh and decomposed litter.

A1-0 to 1 inches; dark grayish brown (10YR 4/2) very gravelly loam, black (10YR 2/1) moist; strong very fine granular structure; soft, very friable, slightly sticky and nonplastic; abundant very fine roots; medium acid (pH 5.9); abrupt smooth boundary.

A2-1 to 8 inches; light yellowish brown (10YR 6/4) very gravelly loam, dark brown (7.5YR 4/4) moist; moderate very fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; abundant roots; slightly acid (pH 6.1); clear smooth boundary.

Bw-8 to 14 inches; brownish yellow (10YR 6/5) very gravelly loam, dark brown (7.5YR 4/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common roots; medium acid (pH 5.9); gradual wavy boundary.

C-14 to 22 inches; light yellowish brown (10YR 6/4) extremely gravelly loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, sticky and slightly plastic; common roots; medium acid (pH 6.0); abrupt irregular boundary.

R-22+ inches; slightly hard, weathered serpentinite.

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; Section 33,

T. 15 N., R. 6 E.

Range in Characteristics: Depth to a lithic or paralithic contact is 20 to 40 inches deep. The mean annual soil temperature is 47 to 59° F.; the mean January soil temperature is 35 to 45° F.; the mean July soil temperature is 55 to 73° F. The soil temperature exceeds 41° F. from February 20 to December 1 and is greater than 47° F. from March 20 to November 15. The soil between the depths of 9 to 28 inches is dry in all parts from July 15 to October 20 and moist in some or all parts the rest of the year. The soil is medium acid to neutral. Base saturation (By NH₄OAc) is assumed to be greater than 60 percent in some part between the depths of 10 to 30 inches as other profiles indicate.

The A horizon is yellowish red, reddish brown, dark grayish brown, and light yellowish brown (5YR 4/4, 4/6, 5/4; 10YR 4/2, 6/4). The moist colors are black, dark reddish brown, reddish brown, brown or dark brown (2.5YR 3/4; 5YR 3/4, 4/4; 7.5YR 4/4; 10YR 2/1). It is gravelly or very gravelly loam or sandy loam. There are 35 to 55 percent gravel and 10 to 20 percent cobbles. Reaction is medium to slightly acid.

The Bw horizon is yellowish red, reddish yellow, or light yellowish brown (5YR 5/6; 7.5YR 6/6, 6/8; 10YR 6/4, 6/5). Moist colors are reddish brown, yellowish red, strong brown and dark brown (2.5YR 4/4; 5YR 4/6; 7.5YR 4/4, 5/6). Texture is very gravelly or extremely gravelly loam or sandy loam, with 35 to 60 percent gravels and 25 to 30 percent cobbles. Reaction is medium to slightly acid.

The C horizon is light brown, reddish yellow, yellowish brown, light yellowish brown, or very pale brown (7.5YR 6/6, 7/6; 10YR 5/6, 6/4, 7/4, 8/4). Moist colors are brown, strong brown, dark yellowish brown, or yellowish brown (7.5YR 5/4, 5/6; 10YR 4/4, 5/4). It is very gravelly or extremely gravelly loam or silty loam, with 35 to 80 percent gravels and 20 to 30 percent cobbles. Reaction is medium to slightly acid.

Use and Vegetation: Used for timber, watershed and wildlife habitat. The native vegetation includes Douglas-fir, sugar pine, ponderosa pine, incense cedar, tanoak, pinemat manzanita, beargrass, madrone, huckleberry oak, and California fescue.

WINTONER FAMILY

The Wintoner family consists of deep to very deep, well drained soils that formed in material weathered from metamorphic and igneous rocks. Wintoner soils are on mountain sideslopes, volcanic uplands, footslopes and flow terraces. Slopes range from 2 to 50 percent. The mean annual precipitation is 20 to 65 inches and the mean annual temperature is about 42°. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Fine-loamy, mixed, frigid Ultic Haploxeralfs.

Typical Pedon: Wintoner family gravelly loam - on a 16 percent northwest-facing slope at 4,800 feet elevation, under a mixed conifer forest. (Colors are for dry soil unless otherwise stated.)

O-1 to 0 inches; mixed and loosely matted bark, stems, conifer needles and fibrous humus.

A1-0 to 5 inches; grayish brown (10YR 5/2) gravelly loam, dark brown (7.5YR 3/2) moist; moderate fine and medium granular structure; soft, very friable, nonsticky and nonplastic; common very fine and medium and few fine roots; 20 percent pebbles and 10 percent cobbles; neutral (pH 6.8); clear wavy boundary.

A2-5 to 11 inches; light brown (7.5YR 6/4) cobbly loam, dark reddish brown (5YR 3/3) moist; weak and moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; common medium and few fine, very fine and coarse roots; 10 percent pebbles and 15 percent cobbles; neutral (pH 6.8); clear wavy boundary.

Bt1-11 to 21 inches; light reddish brown (5YR 6/4) gravelly loam, dark reddish brown (5YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common clay bridging and few thin clay films on ped faces; common coarse and medium and few fine roots; 20 percent pebbles and 5 percent cobbles; slightly acid (pH 6.5); gradual wavy boundary.

Bt2-21 to 29 inches; light reddish brown (5YR 6/4) gravelly loam, dark reddish brown (5YR 3/4) moist; moderate fine and medium angular and subangular blocky structure; slightly hard, friable, sticky and plastic; few thin and moderately thick clay films on ped faces and in pores; common coarse and few medium and fine roots; 15 percent pebbles and 5

percent cobbles; mildly alkaline (pH 7.5); clear wavy boundary.

Bt3-29 to 60+ inches; light reddish brown (5YR 6/4) extremely gravelly loam, dark reddish brown (5YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few thin clay films in pores and on ped faces; 65 percent pebbles and 8 percent cobbles; mildly alkaline (pH 7.5).

Type Location: Goosenest Ranger District, Klamath National Forest; Siskiyou County, California; 4 miles northwest of Willow Creek Peak, 3 miles west of Lodgepole Station and 1/4 mile southwest of road crossing at Cold Creek; NW 1/4 Section 10, T. 46 N., R. 4 W.

Range in Characteristics: Depth to a lithic or paralithic contact is 40 to 60+ inches. Mean annual temperature is 37 to 46°F.; mean January soil temperature is 32 to 36°F.; and mean July soil temperature is 47 to 57°F. The soil temperature exceeds 41°F. from April 10 to November 20 and exceeds 47°F. from May 15 to October 25. The soil between a depth of 8 and 23 inches is dry in all parts from August 1 to October 15 in most years and is moist in some or all parts the rest of the year. The base saturation is less than 75 percent within the argillic horizon.

The A horizon is very dark gray, dark brown, grayish brown, brown, light brown or reddish brown (10YR 3/1, 4/3, 5/2, 5/3; 7.5YR 5/4, 6/4; 5YR 4/4). Moist colors are black, very dark brown, very dark grayish brown, dark brown or dark reddish brown (10YR 2/1, 2/2, 3/2, 3/3; 7.5YR 3/2, 3/4; 5YR 3/3). It is loam, gravelly loam or cobbly loam with 13 to 20 percent clay and 5 to 35 percent gravel, cobbles and stones. Reaction is acid to mildly alkaline.

The Bt horizon is brown, pale brown or light reddish brown (10YR 5/3, 6/3, 6/4, 6/6; 7.5YR 6/4; 5YR 4/3, 6/4). Moist colors are dark yellowish brown, yellowish brown, dark brown or dark reddish brown (10YR 3/3, 3/4, 4/3, 4/4, 5/4; 7.5YR 3/4, 4/4; 5YR 3/3, 3/4). It is loam, gravelly to extremely gravelly loam, cobbly to very cobbly loam, very stony loam, clay loam, cobbly clay loam, stony clay loam, gravelly clay loam or gravelly sandy clay loam with 20 to 38 percent clay and less than 35 percent gravels, cobbles and stones. The weighted average of the family control section is 20 to 35 percent clay and less than 35 percent rock fragments. Reaction is very strongly acid to mildly alkaline.

Use and Vegetation: Used primarily for timber production, wildlife habitat and watershed. Native vegetation includes white fir, ponderosa pine, Douglas-fir, red fir, lodgepole pine, incense cedar, chinquapin, pine-

mat manzanita, ribes, snowbrush, bitterbrush, greenleaf manzanita, deerbrush, lupine, pussy paws, carex, brome, fescue and bottlebrush squirreltail.

WINTONER FAMILY, PUMICE OVERBURDEN

The Wintoner family, pumice overburden consists of very deep, well to somewhat excessively drained soils that formed in pyroclastic materials deposited over soil and basaltic or andesitic rock. These soils are on volcanic mountain sideslopes, benches and ridges. Slopes range from 2 to 50 percent. The mean annual precipitation is 20 to 40 inches and mean annual temperature is about 40° F. Elevations are 5,000 to 7,000 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Fine-loamy, mixed, frigid Ultic Haploxeralfs (pumice overburden phase).

Typical Pedon: Wintoner family extremely gravelly coarse sand - on a 2 percent sloping volcanic upland flat at 5,800 feet elevation, under lodgepole pine and buckwheat. (Colors are for dry soil unless otherwise stated. When described, 6/4/79, the soil was moist throughout except for the overburden).

A1-0 to 2 inches: extremely gravelly coarse sand; single grain; 90 percent pumice pebbles; strongly acid (pH 5.3); clear smooth boundary.

A2-2 to 13 inches; light yellowish brown (10YR 6/4) very gravelly coarse sand, dark brown (10YR 3/3) moist; single grained: loose, loose, nonsticky and nonplastic; few very fine, fine, and medium roots; many fine and medium interstitial pores; 55 percent pumice pebbles; strongly acid (pH 5.4); abrupt wavy boundary.

2A1b-13 to 30 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky, and nonplastic; few very fine, fine, and coarse roots; common very fine and fine interstitial and few very fine tubular pores; 8 percent pebbles; medium acid (pH 5.9); gradual smooth boundary.

2Bt1b-30 to 43 inches; light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, and slightly plastic; few very fine roots; few very fine interstitial and tubular pores; 13 percent pebbles; slightly acid (pH 6.1); clear wavy boundary.

2Bt2b-43 to 64 inches; light brown (7.5YR 6/4) sandy loam, brown (7.5 YR 4/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few thin clay films in pores and bridging; few very fine

and fine roots; common fine tubular and few very fine interstitial pores; 3 percent pebbles; slightly acid (pH 6.2).

Crb-64+ inches; cinders.

Type Location: Goosenest District, Klamath National Forest; Siskiyou County, California; about 5.5 miles west of Little Glass Mountain and 2.5 miles south southwest of Tamarack Flat; SW 1/4 NE 1/4 Section 18, T. 43 N., R. 2 E.

Range in Characteristics: Depth to a lithic contact is greater than 60 inches. Mean annual soil temperature is 36 to 46° F.; mean January soil temperature is 30 to 35° F.; and mean July soil temperature is 43 to 55° F. The soil temperature exceeds 41° F. from April 15 to November 20 and exceeds 47° F. from June 1 to October 20. The soil between a depth of 15 to 34 inches is dry throughout from August 1 to October 15 in most years and is moist in some or all parts the rest of the year.

The A horizon is composed of layers of ash and pumice. It is very dark gray, gray, light gray, dark grayish brown, grayish brown, yellowish brown, light yellowish brown, or white (10YR 3/1, 4/2, 5/1, 5/2, 5/4, 6/4, 7/2, 8/2). Moist colors are black, very dark gray, very dark grayish brown, dark brown, dark yellowish brown, grayish brown, brown, light grayish brown, or pale brown (10YR 2/1, 3/1, 3/2, 3/3, 4/3, 4/6, 5/2, 5/3, 6/2, 6/3) or a mixture of the above. It is gravelly to extremely gravelly coarse sand, gravelly to extremely gravelly loamy coarse sand, or gravelly to very gravelly coarse sandy loam with 5 to 8 percent clay and 15 to 90 percent pumice gravel. Reaction is strongly to medium acid.

The 2Ab horizon is yellowish brown or brown (10YR 5/4, 5/3; 7.5YR 5/4). Moist colors are dark yellowish brown or dark brown (10YR 3/4, 4/3; 7.5YR 3/4). Texture is sandy loam, gravelly sandy loam or loam, with 5 to 18 percent clay and 5 to 20 percent gravel. Reaction is strongly to slightly acid.

The 2Btb horizon is yellowish brown, light yellowish brown, or light brown (10YR 5/6, 6/4; 7.5YR 6/4). Moist colors are dark yellowish brown or dark brown (10YR 3/4, 3/6, 4/4; 7.5YR 4/4). It is sandy loam, gravelly sandy loam, loam, or gravelly loam, with 5 to 22 percent clay and 3 to 35 percent gravel and cobbles. Reaction is medium acid to neutral.

Some pedons have a 2Cb horizon that is similar in color to the 2Bb horizon, but is one to two chromas or values

lower than the horizons above. It is also similar to the 2Bb horizon in texture except for a marked increase in coarse fragments. Reaction is medium acid to neutral.

Use and Vegetation: Used mainly for timber production and wildlife habitat. Native vegetation is lodgepole pine, ponderosa pine, white fir, Douglas-fir, incense

cedar, sugar pine, a few red fir, big sagebrush, snowbrush, greenleaf manzanita, rabbitbrush, bitterbrush, squaw carpet, Oregon grape, deerbrush, currant, wild rose, gooseberry, snowberry and perennial grasses, usually bottlebrush squirreltail, stipas and a few wheatgrasses.

WOODSEYE FAMILY

The Woodseye family consists of shallow, well drained soils formed in residuum from metamorphic rocks. These soils occur on mountain sideslopes and ridges. Slopes range from 50 to 90 percent. The mean annual precipitation is 60 to 100 inches and the mean annual temperature is 43° F. Elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Taxonomic Class: Loamy-skeletal, mixed, frigid Lithic Xerumbrepts.

Typical Pedon: Woodseye family very gravelly loam - on a 60 percent southwest-facing slope at 5,450 feet elevation, under a cover of huckleberry oak, squaw carpet, manzanita, and a few scattered white fir and incense cedar. (Colors are for dry soil unless otherwise noted).

O-1/2 to 0 inches; loose shrub leaves and herbaceous material.

A1-0 to 2 inches; dark grayish brown (10YR 4/2) very gravelly loam, black (10YR 2/1) moist; moderate very fine granular structure; soft, very friable, slightly sticky and nonplastic; 50 percent pebbles; strongly acid (pH 5.1); clear smooth boundary.

A2-2 to 7 inches; dark brown (10YR 4/3) very gravelly loam, dark brown (7.5YR 3/2) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; 40 percent pebbles; very strongly acid (pH 4.8); gradual smooth boundary.

C-7 to 19 inches; brown (10YR 5/3) very gravelly loam, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, slightly sticky and nonplastic; 50 percent pebbles; very strongly acid (pH 4.8); abrupt irregular boundary.

R-19+ inches; fractured hard metamorphic bedrock.

Type Location: Happy Camp District, Klamath National Forest; Siskiyou County, California; about 1.4 mile southeast of Buckhorn Mountain on Big Ridge in the Marble Mountain Wilderness area; SW 1/4 SE 1/4 Section 16, T. 44 N., R. 12 W., Mount Diablo Base Meridian.

Range in Characteristics: Depth to a lithic contact is less than 20 inches deep. Mean annual soil temperature is about 37 to 47° F.; mean January soil temperature is 30 to 39° F.; mean July soil temperature is 41 to 62° F. The soil temperature at the bedrock contact exceeds 41° F. from April 1 until November 1. The soil is dry between the depths of 4 and 12 inches from mid-July until mid-October in most years and is moist in some or all parts the remainder of the year.

The A horizon is brown, dark grayish brown or dark yellowish brown (10YR 4/2, 4/3, 4/4, 5/3) dry, and black, very dark grayish brown, or dark brown (10YR 2/1, 3/2, 3/3; 7.5YR 3/2) moist. It is gravelly or very gravelly loam. Coarse fragments are 25 to 50 percent by volume. Reaction is medium acid to very strongly acid. Base saturation (by NH₄ OAc) is assumed to be less than 50 percent.

The C horizon is brown or yellowish brown (10YR 5/3, 5/4) dry, dark brown or very dark grayish brown (10YR 3/2, 3/3) moist. It is a very gravelly loam. Coarse fragments are 50 to 60 percent by volume. Reaction is slightly acid to very strongly acid.

Use and Vegetation: Used mostly for watershed and wildlife. Native vegetation consists of brushfields of huckleberry oak, squaw carpet, greenleaf and pinemat manzanita, snowbrush, wild buckwheat, Indian paintbrush, lupine and bittercherry with a few scattered red fir, white fir and incense cedar.

WORLEY FAMILY

The Worley family consists of deep and very deep, well drained soils formed in residuum from basic plutonic rock. Worley family soils are on mountain footslopes and undulating flats. Slopes range from 2 to 30 percent. The mean annual precipitation is 30 to 40 inches and the mean annual temperature is about 47.o.F. Elevations are 3,500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winterS.

Taxonomic Class: Fine, montmorillonitic, mesic Mollic Palexeralfs

Typical Pedon: Worley family loam - on an 8 percent southeast-facing slope at 4,250 feet elevation, under mixed conifers, shrubs, forbs and grasses. (Colors are for dry soil unless otherwise stated)

O-1 to 0 inches; fresh loose needles and twigs

A1-0 to 2 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; few thin clay films on ped faces and as bridges; common very fine roots; 5 percent p ebbles; mildly alkaline (pH 7.5); clear smooth boundary

A2-2 to 8 inches; brown (7.5YR 5/4) clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; soft, friable, sticky and plastic; common thin clay films on ped faces, lining pores and as bridges; few very fine, medium and common fine roots; 3 percent pebbles; neutral (pH 7.0); clear smooth boundary

Bt1-8 to 17 inches; yellowish brown (10YR 5/4) clay, yellowish brown (10YR 5/4) moist; strong coarse subangular blocky structure; hard, firm, very sticky and very plastic; pressure faces occur on peds; few very fine, coarse and common fine and medium roots; 3 percent pebbles; slightly acid (pH 6.5); clear smooth boundary

Bt2-17 to 35 inches; yellowish brown (10YR 5/4) clay, yellowish brown (10YR 5/4) moist; strong subangular blocky structure; hard firm, very sticky and

very plastic; pressure faces occur on peds; few fine and medium roots; 3 percent pebbles; slightly acid (pH 6.5); gradual wavy boundary

Bt3-35 to 60+ inches; yellowish brown (10YR 5/6) clay loam, dark yellowish brown (10YR 4/4) moist; strong coarse subangular blocky structure; hard, firm, sticky and plastic; pressure faces occur on peds; few very fine, fine medium and coarse roots; 5 percent pebbles; slightly acid (pH 6.5)

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; SE 1/4 SW 1/4 Section 32, T. 47 N., R. 7 W

Range in Characteristics: Depth to lithic contact is 40 to 60+ inches. Mean annual soil temperature is 47 to 52.o.F.; mean January soil temperature is 34 to 37.o.F.; mean July soil temperature is 52 to 65.o.F. The soil temperature exceeds 41.o.F. from March 10 to December 1 and exceeds 47.o.F. from April 10 to November 10. The soil between the depths of 6 to 16 inches is dry from July 20 to October 20 in most years and moist in some or all parts the rest of the year.

The A horizon is grayish brown or brown (10YR 5/2, 5/3; 7.5YR 5/ 4). Moist colors are very dark grayish brown or dark brown (5YR 3/3; 10YR 3/2, 3/3). It is loam, clay loam or very gravelly sandy clay loam. Reaction is neutral to mildly alkaline

The Bt horizon is yellowish brown or brown (10YR 5/4, 5/6; 7.5YR 5/4). Moist colors are dark yellowish brown or yellowish brown (7.5YR 4/4; 10YR 4/4, 5/4). It is gravelly clay, gravelly clay loam, clay loam or clay. Reaction is neutral or slightly acid.

Use and Vegetation: Used mainly for timber production, watershed, wildlife habitat and range. Native vegetation is ponderosa pine, incense cedar, white oak, greenleaf and whiteleaf manzanita, rabbitbrush, western mountain mahogany, silktassel, buckbrush, bottlebrush squirreltail, Idaho fescue, dogbane, lupine, sedge, bedstraw and vetch.

ZEIBRIGHT FAMILY

The Zeibright family consists of moderately deep, well drained residual and colluvial soils formed from granitic rocks. These soils occur on broad mountain sideslopes and ridges. Slopes range from 30 to 70 percent. The mean annual precipitation is 35 to 50 inches and the mean annual temperature is 51.o. F. Elevations are 1,500 to 5,000 feet . The climate is mediterranean, with warm dry summers and cool moist winters.

Taxonomic Class: Loamy-skeletal, mixed, mesic Entic Xerumbrepts.

Typical Pedon: Zeibright family gravelly loam - on a 55 percent southeast- facing slope at 4,400 feet elevation under a cover of Douglas-fir, ponderosa pine, sugar pine, black oak and deerbrush. (Colors are for dry soil unless otherwise stated).

O-1 to 0 inches; matted conifer needles and broadleaves.

A1-0 to 5 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common very fine and fine, and few medium roots; common very fine and fine interstitial pores; 10 percent pebbles; slightly acid (pH 6.5); clear smooth boundary.

A2-5 to 7 inches thick; brown (10YR 5/3) very gravelly coarse sandy loam, dark brown (10 YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few fine and medium, and common very fine roots; common very fine and fine interstitial pores; 40 per cent pebbles and 5 percent cobbles; medium acid (pH 6.0); gradual wavy boundary.

C1-7 to 18 inches; yellowish brown (10YR 5/4) very gravelly loamy coarse sand, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; common very fine and fine interstitial pores; 50 percent pebbles and 10 percent cobbles; medium acid (pH 6.0); clear smooth boundary.

C2-18 to 30 inches; pale brown (10YR 6/3) extremely gravelly loamy coarse sand, yellowish brown (10YR

5/4) moist; massive; loose, loose, nonsticky and nonplastic; few very fine roots; common very fine in terstitial pores; 75 percent pebbles and 2 percent cobbles; medium acid (pH 6.0); gradual wavy boundary.

Cr-30+ inches; soft, weathered granitic bedrock.

Type Location: Oak Knoll District, Klamath National Forest; Jackson County, Oregon; on Road 40S06 along Grouse Creek, SW 1/4 SW 1/4 Section 32, T. 41 S., R. 1 E.

Range in Characteristics: Depth to a lithic or paralithic contact is 20 to 40 inches deep. The mean annual soil temperature is 47 to 59.o. F.; the mean January soil temperature is 36 to 45.o. F.; the mean July soil temperature is 55 to 73.o. F. The soil temperature at a depth of 20 inches exceeds 41.o. F. from February 20 to December 1 and exceeds 47.o. F. from March 20 to November 15. The soil is dry between the depths of 15 and 40 inches, or the lithic contact, from July 15 to October 20 in most years, and is moist in some or all parts the remainder of the year.

The A horizon is dark grayish brown, brown, grayish brown, or yellowish brown (10YR 4/2, 4/3, 5/2, 5/3, 5/4). Moist colors are very dark brown, very dark grayish brown, or dark brown (10 YR 2/2, 3/2, 3/3). It is a loam or coarse sandy loam and may be gravelly or very gravelly. It has 10 to 40 percent gravel and 0 to 5 percent cobbles. Reaction is medium acid to neutral.

The C horizon is yellowish brown, pale brown, light yellowish brown or very pale brown (10YR 5/4, 6/3, 6/4, 7/3, 7/4). Moist colors are brown, dark yellowish brown or yellowish brown (10YR 4/3, 4/4, 5/3, 5/4). It is very gravelly or extremely gravelly loamy coarse sand. It has 40 to 75 percent gravel and 2 to 10 percent cobbles. Reaction is strongly acid to neutral.

Use and Vegetation: Used primarily for timber production, rangeland and wildlife habitat. Native vegetation consists of Douglas-fir, ponderosa pine, white fir, incense cedar, sugar pine, black oak, big leaf maple, deerbrush, white leaf and greenleaf manzanita, chinquapin and snowbrush.

MOLLIC PALEXERALFS

Mollic Palexeralfs are moderately deep, well drained residual soils formed from cemented till. These soils occur on broad ridges, mountain sideslopes and colluvial slopes. Slopes range from 15 to 50 percent. The mean annual precipitation is 30 to 50 inches and the mean annual temperature is 42.o.F. Elevations are 5,000 to 6,800 feet . The climate is mediterranean, with warm dry summers and cold moist winters.

Typical Pedon: Mollic Palexeralf very gravelly sandy clay loam - on a 28 percent slope at 5,700 feet elevation, under a cover of Jeffery pine, incense cedar, Douglas-fir, white fir, greenleaf manzanita, squaw carpet, California coffeeberry, huckleberry oak and California fescue. (Colors are for dry soil unless otherwise stated).

Oi-4 to 1 inches; fresh conifer needles and twigs.

Oe-1 to 0 inches; decomposed needles.

A1- -0 to 7 inches; brown (7.5YR 5/4) very gravelly sandy clay loam, dark reddish brown (5YR 3/3) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; few fine and common very fine, medium, and coarse roots; 40 percent pebbles, 10 percent cobbles and 15 percent stones; neutral (pH 7.0); clear smooth boundary.

Bt1-7 to 17 inches; brown (7.5YR 5/4) gravelly clay, dark brown (7.5YR 4/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine, fine, and coarse and common medium roots; pressure faces on peds; 25 percent pebbles; neutral (pH 7.0); gradual smooth boundary.

BC-17 to 28 inches; brown (10YR 5/3) gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few very fine, fine, and

medium roots; 20 percent pebbles and 3 percent cobbles; neutral (pH 7.0); abrupt smooth boundary.

Cr-28+ inches; soft, weathered cemented till with structure of parent material evident.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; about 1/4 mile north of Rock Fence Creek; NE 1/4 NW 1/4 Section 35, T. 41 N., R. 7 W., Mount Diablo Base Meridian.

Range in Characteristics: Depth to weathered cemented till is 20 to 40 inches. The mean annual soil temperature is 40 to 44.o.F. The soils are usually dry between the depths of 9 and 23 inches from August 1 to October 15 in most years, and are moist in some or all parts the remainder of the year.

The A horizon is brown (7.5YR 5/4, 4/2). Moist colors are dark reddish brown or dark brown (5YR 3/3; 7.5YR 3/2). It is extremely gravelly, very gravelly or very stony sandy clay loam. Rock fragments average 65 to 75 percent by volume. Reaction is neutral to mildly alkaline.

The Bt horizon is dark brown, dark yellowish brown or brown (10YR 4/3, 4/4; 7.5YR 5/4). Moist colors are dark brown, dark yellowish brown or brown (10YR 4/3, 4/4, 5/3, 5/4; 7.5YR 4/4). It is clay, gravelly clay, cobbly clay or gravelly clay loam. Rock fragments average 10 to 35 percent by volume. Reaction is neutral to mildly alkaline.

The Cr horizon is soft, weathered cemented till.

Use and Vegetation: Used primarily for timber production, wildlife habitat and rangeland. Native vegetation is Jeffrey pine, Douglas-fir, white fir, incense cedar, greenleaf manzanita, squaw carpet, coffeeberry, huckleb erry oak, and California fescue.

LITHIC MOLLIC HAPLOXERALS

Lithic Mollic Haploxeralfs are very shallow or shallow well drained residual soils formed from serpentinitic, metasedimentary or igneous rocks. These soils occur on steep to very steep mountain sideslopes. Slopes range from 30 to 90 percent. Mean annual precipitation is 30 to 80 inches and the mean annual temperature is 42 to 49.o.F. Elevations are 1,000 to 6,800 feet. The climate is mediterranean, with warm dry summers and cool to cold moist winters.

Typical Pedon: Lithic Mollic Haploxeralf very gravelly sandy loam - on a 35 percent northeast-facing slope at 6,200 feet elevation under a few white fir and juniper with mountain mahogany, greenleaf manzanita, wild buckwheat, big sagebrush, huckleberry oak, Indian paintbrush, wild onion and bottlebrush squirreltail. The soil surface is 55 percent bare ground with a gravel pavement. (Colors are for dry soil unless otherwise stated.)

A-0 to 3 inches; brown (10YR 5/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, non-sticky and nonplastic; few very fine and fine roots; 45 percent pebbles; medium acid (pH 5.8); clear wavy boundary.

Bt1-3 to 6 inches; brown (10YR 5/3) very gravelly loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; few thin clay films in pores, on ped faces and as bridges; few very fine and fine roots; 35 percent pebbles and 5 percent cobbles and stones; medium acid (pH 5.8); clear wavy boundary.

Bt 2-6 to 14 inches; brown (10YR 5/3) extremely cobbly loam, dark brown (10YR 3/3) moist; weak very fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few thin clay films in pores, on ped faces and as bridges; few very fine and fine roots; 20 percent pebbles and 50 percent cobbles and stones; medium acid (pH 5.8); abrupt irregular boundary.

R-14+ inches; fractured metamorphic rock.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; 1/4 mile northwest of Lilly Pad Lake, 1 mile west-northwest of Kangaroo Lake on trail; SE 1/4 SE 1/4 Section 10, T. 40 N., R. 7 W.

Range in Characteristics: Depth to a lithic contact is less than 20 inches. The mean annual soil temperature is 38 to 59.o.F. The soil between a depth of 7 and 14 inches or to the lithic contact is dry in all parts from July 20 to October 15 in most years, and is moist in some or all parts the rest of the year.

The A horizon is brown or grayish brown (7.5YR 4/4, 5/4; 10YR 4/3, 5/2, 5/3). Moist colors are dark brown, very dark brown, or very dark grayish brown (7.5YR 3/2; 10YR 2/2, 3/2, 3/3). Colors meet mollic criteria either on depth, or by having bedrock directly beneath the epipedon. It is loam or sandy loam and may be gravelly or very gravelly. Rock fragments average 15 to 50 percent. Reaction is strongly acid to mildly alkaline. Base saturation is less than 50 percent.

The Bt horizon is brown, pale brown, yellowish brown, or light yellowish brown (7.5YR 4/4 ; 10YR 5/3, 5/4, 6/3, 6/4). Moist colors are dark brown, very dark grayish brown, dark yellowish brown, or dark grayish brown (7.5YR 3/4; 10YR 3/2, 3/3, 3/4, 4/2, 4/3, 4/4). It is loam, clay loam or sandy clay loam and may be gravelly, very gravelly, cobbly, very cobbly or extremely cobbly. Clay content increases by three percent from the above horizons. Rock fragments average 35 to 60 percent. Reaction is medium acid to mildly alkaline.

The R horizon is fractured serpentinitic, metamorphic or igneous rock within a depth of 20 inches.

Use and Vegetation: Used primarily for wildlife and watershed. Native vegetation is Jeffrey pine, incense cedar, mountain mahogany, greenleaf and whiteleaf manzanita, bigleaf sagebrush, white fir, Douglas-fir, ponderosa pine, knobcone pine, huckleberry oak, buckbrush, silktassel, Oregon white oak, canyon live oak, bottlebrush squirreltail, berberis, California fescue, western juniper, buckwheat and annual grasses.

HAPLIC DURIXERALFS

Haplic Durixeralfs are shallow, somewhat poorly drained soils that formed in material weathered from glacial outwash and alluvium. These soils occur on volcanic uplands. Slopes range from 0 to 15 percent. The mean annual precipitation is about 20 inches and the mean annual temperature is about 44.o.F. Elevations are 4,400 to 5,500 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Typical Pedon: Haplic Durixeralf loam - on a 5 percent south-facing convex slope at 4,850 feet elevation, under big sagebrush, antelope bitterbrush and California fescue. (Colors are for dry soil unless otherwise stated.).

A1-0 to 3 inches; grayish brown (10YR 5/2) loam, very dark brown (10YR 2/2) moist; moderate fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; 4 percent pebbles and cobbles; neutral (pH 6.7); clear wavy boundary.

A2-3 to 8 inches; brown (10YR 5/3) loam, dark brown (7.5YR 3 /2) moist; weak fine subangular blocky structure; soft, friable, slightly sticky and slightly plastic; few very fine roots; 4 percent pebbles and cobbles; neutral (pH 7.0); gradual irregular boundary.

Bt1-8 to 16 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common moderately thick clay films on ped faces; 5 percent gravel size durinodes; mildly alkaline (pH 7.5); gradual irregular boundary.

C1m-16 to 28 inches; light yellowish brown (10YR 6/4) cemented sandy loam, dark yellowish brown (10YR 4/4) moist; massive; weakly cemented; common moderately thick clay films in cracks and few pores; mildly alkaline (pH 7.5); gradual wavy boundary.

C2m-28 to 35+ inches; light yellowish brown (10YR 6/4) cemented sandy loam, dark yellowish brown (10YR 4/4) moist; massive; weakly to strongly cemented; moderately alkaline (pH 8.0).

Type Location: Goosene Ranger District, Klamath National Forest; Siskiyou County, California; about 2

1/4 miles southeast of Herd Peak Lookout, 2 miles northeast of Sheep rock, 3 3/4 miles west of Deer Mountain, 1 1/3 miles north of Deer Mountain Lodge in road cut on U.S. Highway 97; SE 1/4 NW 1/4 Section 4, T. 43 N., R. 3 W.

Range in Characteristics: Depth to a duripan is less than 20 inches and depth to bedrock is greater than 40 inches. The mean annual soil temperature is 44 to 48.o.F. The soil between a depth of 6 inches and the top of the duripan is dry from August 1 to October 20 in most years and is moist in some or all parts the rest of the year.

The A horizon is grayish brown, brown, light grayish brown or light brown (10YR 5/2, 5/3, 6/2, 6/3). Moist colors are very dark brown, very dark grayish brown or dark brown (10YR 2/2, 3/2; 7.5YR 3/2). It is a loam or sandy loam with 12 to 18 percent clay and 0 to 10 percent gravel and cobbles. Reaction is neutral to mildly alkaline.

The Bt horizon is pale brown or light yellowish brown (10YR 6/3, 6/4). Moist colors are very dark grayish brown, dark brown, dark grayish brown or dark yellowish brown (10YR 3/2, 3/3, 4/2, 4/4). It is a loam or sandy clay loam with 24 to 29 percent clay and 0 to 12 percent gravel and cobbles. Reaction is neutral to mildly alkaline.

The Cm horizon is light yellowish brown or very pale brown (10YR 6/4, 7/4). Moist colors are dark brown or dark yellowish brown (10YR 4/3, 4/4). It is sandy loam, very cobbly sandy clay loam, very cobbly sandy clay or very cobbly clay with 15 to 45 percent clay and 0 to 60 percent gravel and cobbles. This horizon is massive and weakly to strongly cemented but is not indurated. Cappings of siliceous or calcareous material are found in this horizon in many of the pedons. They appear to be siliceous, but some slightly effervesce in hydrochloric acid. Reaction is neutral to moderately alkaline.

Use and Vegetation: Used primarily for rangeland and wildlife habitat. Native vegetation is big sagebrush, black or low sagebrush, greenleaf manzanita, bitterbrush, fescue, bluegrass, bottlebrush squirreltail, stipa, cheatgrass, figwort, aster, yarrow, larkspur, shooting star, mustard and a few ponderosa pine and juniper.

LITHIC RUPTIC -XEROCHREPTIC HAPLOXERALS

Lithic Ruptic-Xerochreptic Haploxeralfs are shallow well drained residual soils formed from ultramafic rocks. These soils occur on steep to extremely steep mountain sideslopes. Slopes range from 30 to 90 percent. Mean annual precipitation is 50 to 100 inches and the mean annual temperature is 37 to 57.o.F. Elevations are 1,500 to 6,800 feet. The climate is mediterranean, with warm dry summers and cool to cold moist winters.

Typical Pedon: Lithic Ruptic-Xerochreptic Haploxeralf loam - on a 75 percent southwest-facing slope at 3,300 feet elevation, under a stand of Jeffrey pine, incense cedar and whiteleaf manzanita. (Colors are for dry soil unless otherwise stated.).

O-1 to 0 inches; loose conifer needles.

A1-0 to 1 inches; reddish brown (5YR 4/4) very gravelly loam, dark reddish brown (5YR 3/3) moist; moderate very fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine roots; medium acid (pH 6.0); clear smooth boundary.

Bt1-1 to 6 inches; red (2.5YR 4/6) very gravelly loam, reddish brown (2.5YR 4/4) moist; moderate fine and medium subangular blocky structure; soft, friable, sticky and slightly plastic; common roots; medium acid (pH 6.0); gradual smooth boundary.

Bt2-6 to 11 inches; red (2.5YR 4/6) very gravelly clay loam, red (2.5YR 4/6) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common thin clay films on ped faces and in pores; medium acid (pH 6.0); gradual broken boundary.

Bt3-11 to 17 inches; yellowish red (5YR 4/6) very cobbly clay loam, yellowish red (5YR 4/6) moist; weak fine subangular blocky structure; soft, friable, sticky and plastic; few thin clay films on ped faces and in pores; common roots; medium acid (pH 6.0) ; abrupt irregular boundary.

R-17+ inches; hard bedrock.

Type Location.: Oak Knoll District, Klamath National Forest; Siskiyou County, California; Section 20, T. 47 N., R. 11 W.

Range in Characteristics: The soil is 10 to 20 inches deep to hard, fractured bedrock. The mean annual soil temperature is 39 to 59. o.F. The soils are usually dry between the depths of 6 and 14 inches or to the lithic contact from August 1 to October 15, and is moist in some or all parts the rest of the year.

The A horizon is red, reddish brown, yellowish red or strong brown (2.5YR 4/6, 5/4, 5/6; 5YR 4/4, 4/6; 7.5YR 5/6). Moist colors are dark reddish brown, red, reddish brown, or dark brown (2.5YR 3/4, 4/6; 5YR 3/3, 3/4, 4/4; 7.5YR 4/4). It is very to extremely gravelly loam or very to extremely cobbly loam. Rock fragments average 50 to 80 percent. Reaction is medium acid to neutral.

The Bt horizon is reddish brown, red, yellowish brown, yellowish red or strong brown (2.5YR 4/4, 4/6; 5YR 4/6, 5/6, 5/8; 7.5YR 5/6). Moist colors are red, reddish brown, or yellowish red (2.5YR 4/4, 4/6; 5YR 4/4, 4/6, 5/6). It is very to extremely gravelly or cobbly loam or very to extremely gravelly or cobbly clay loam, with a three percent increase in the clay content in most pedons, except where the lithic contact is closest to the soil surface. There are 40 to 80 percent rock fragments. Reaction is medium acid.

The R horizon is hard, slightly fractured peridotite.

Use and Vegetation: Used primarily for watershed, range and wildlife habitat. Native vegetation is Jeffrey pine, incense cedar, Douglas-fir, pinemat manzanita, whiteleaf and greenleaf manzanita, madrone, buckbrush, squaw carpet, California coffeeberry, beargrass, huckleberry oak, silktassel and Idaho fescue.

MOLLIC HAPLOXERALS

Mollic Haploxeralfs are very shallow and shallow somewhat excessively drained soils that formed in residuum from weathered and mixed glacial till. These soils occur on ridges and mountain sideslopes. Slopes range from 30 to 50 percent. The mean annual precipitation is 30 to 50 inches and the mean annual temperature is about 38.o.F. Elevations are 5,000 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Typical Pedon: Mollic Haploxeralf gravelly loam - on a 30 percent northwest-facing convex slope at 5,450 feet elevation, under Jeffrey pine, incense cedar, Douglas-fir, white fir, buckbrush, greenleaf manzanita, forbs and grasses. (Colors are for dry soil unless otherwise stated.).

A-0 to 5 inches; dark reddish brown (5YR 3/4) gravelly loam, dark reddish brown (5YR 3/3) moist; moderate fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; mildly alkaline (pH 7.6); clear smooth boundary.

Bt1-5 to 9 inches; brown or dark brown (7.5YR 4/4) silty clay loam, brown or dark brown (7.5YR 4/2) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; few thin clay films as bridges, in pores and on ped faces; few very fine and fine roots; neutral (pH 7.0); abrupt wavy boundary.

Cm-9 to 20+ inches; weathered till with ultramafic coarse fragments.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; NW 1/4 NE 1/4 Section 26, T. 41 N., R. 7 W.

Range in Characteristics: Depth to an indurated horizon is less than 20 inches. The mean annual soil temperature is 37 to 44.o.F. The soil between the depths of 6 inches and the top of the indurated horizon is dry from August 1 to October 15 in most years, and moist in some or all parts the rest of the year.

The A horizon is dark brown, brown, strong brown or dark reddish brown (7.5 YR 4/4, 4/6; 5YR 3/3, 3/4). Moist colors are dark brown or dark reddish brown (7.5YR 3/2; 5YR 3/3). It is loam or gravelly loam. Rock fragments average 10 to 25 percent. Reaction is mildly alkaline. Base saturation is less than 50 percent.

The Bt horizon is brown or dark brown (7.5YR 3/2, 3/4, 4/2, 4/4). Moist colors are dark reddish brown, dark brown or brown (5YR 3/3; 7.5YR 4/2, 4 /4). It is clay loam or silty clay loam and may be gravelly. Rock fragments average 10 to 25 percent. Reaction is slightly acid to neutral.

The Cm horizon is concrete-like cemented till.

Use and Vegetation: Used mainly for watershed, wildlife habitat and timber production. Native vegetation is perennial grasses, Jeffrey pine, incense cedar, Douglas-fir, white fir, buckbrush and greenleaf manzanita.

ULTIC HAPLOXERALS

Ultic Haploxeralfs are moderately deep to very deep well-drained residual soils formed from mica schist. These soils occur on moderately steep mountain sideslopes and landslide benches. Slopes range from 15 to 30 percent. Mean annual precipitation is 55 to 70 inches and the mean annual temperature is about 39.o.F. Elevations are 4,800 to 7,000 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Typical Pedon: Ultic Haploxeralf gravelly loam - on a 25 percent southwest-facing slope at 5,440 feet elevation, under a cover of mixed conifer, shrubs, grasses and forbs. (Colors are for dry soil unless otherwise stated).

O-1 to 0 inches; scattered conifer needles and dried forbs and grasses.

A-0 to 2 inches; yellowish brown (10YR 5/4) gravelly loam, dark brown (7.5YR 4/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine and fine roots; 30 percent pebbles; slightly acid (pH 6.5); abrupt smooth boundary.

Bt1-2 to 11 inches; brown (7.5YR 5/4) gravelly loam, reddish brown (5YR 4/4) moist; moderate fine subangular blocky structure; soft, friable, nonsticky and slightly plastic; many thin clay films on ped faces and in pores; few very fine, fine, and common coarse roots; 25 percent pebbles; slightly acid (pH 6.5); gradual smooth boundary.

Bt2-11 to 18 inches; brown (7.5YR 5/4) very gravelly loam, dark brown (7.5YR 4/4) moist; moderate fine to medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common thin clay films on ped faces and in pores; few very fine and fine roots; 35 percent pebbles and 10 percent cobbles; slightly acid (pH 6.5); clear wavy boundary.

Bt3-18 to 35 inches; yellowish brown (10YR 5/4) extremely cobbly loam, strong brown (7.5YR 4/6) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common thin clay films on ped faces and in pores, and few thin clay films as bridges; few very fine roots; 40 percent pebbles and 40 percent cobbles; slightly acid (pH 6.5); gradual wavy boundary.

R-35+ inches; highly fractured mica schist, breaking off in plates.

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; NE 1/4 NW 1/4 Section 25, T. 47 N., R. 10 W.

Range in Characteristics: Depth to a lithic contact is 20 to 60 inches. The mean annual soil temperature is 36 to 46.o.F. The soils are usually dry between the depths of 8 and 24 inches from August 1 to October 15 in most years, and are moist in some or all parts the remainder of the year.

The A horizon is brown, very dark gray, dark grayish brown, or yellowish brown (7.5YR 4/4; 10YR 3/1, 4/2, 4/3, 5/3, 5/4). Moist colors are dark brown, black, very dark brown, or very dark grayish brown (7.5YR 3/2, 3/4, 4/2, 4/4; 10YR 2/1, 2/2, 3/2). Dark colors do not meet mollic criteria because the argillic horizon has a base saturation of less than 75 percent throughout the upper 30 inches. It is loam, gravelly loam, very gravelly loam or cobbly loam. Rock fragments average 5 to 35 percent gravel and 5 to 25 percent cobbles. Reaction is very strongly acid to neutral.

The Bt horizon is strong brown, brown, reddish yellow, yellowish brown, pale brown, light yellowish brown or pale olive (7.5YR 4/6, 5/4, 5/6, 6/6; 10YR 5/3, 5/4, 6/3, 6/4; 2.5Y 6/4; 5Y 6/3). Moist colors are reddish brown, dark brown, strong brown, dark grayish brown, dark yellowish brown, yellowish brown, olive brown, olive or olive gray (5 YR 4/4; 7.5YR 3/4, 4/4, 4/6; 10YR 3/3, 4/2, 4/3, 4/4, 5/4; 2.5Y 4/2, 4/4; 5Y 4/3, 5/2, 5/3). It is loam or clay loam. Rock fragments average 10 to 75 percent gravel and 5 to 40 percent cobbles. Reaction is very strongly to slightly acid.

The C horizon may be present in some pedons.

The R horizon is a highly fractured and foliated mica schist rock.

Use and Vegetation: Used mainly for timber production, range, wildlife habitat and watershed. Native vegetation is white fir, red fir, incense cedar, Douglas-fir, currant, willow, snowberry, chinquapin, lupine, pen stemon, pussy paws, vetch, annual and perennial grasses.

LITHIC XERORTHENTS, COLD

Lithic Xerorthents, cold, are very shallow or shallow excessively drained soils that formed in residuum from weathered ultramafic rocks. These soils occur on steep to extremely steep mountain sideslopes. Slopes range from 30 to 90 percent. Mean annual precipitation is 50 to 90 inches and the mean annual temperature is about 38.o.F. Elevations are 5,000 to 7,000 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Typical Pedon: Lithic Xerorthent, cold gravelly loamy sand - on a 57 percent southeast-facing slope at 5,600 feet elevation, under Jeffrey pine, incense cedar, western white pine, huckleberry oak, California coffeeberry, purple reedgrass, basin wildrye and forbs. (Colors are for dry soil unless otherwise stated.).

A-0 to 3 inches; brown or dark brown (7.5YR 4/4) gravelly loamy sand, brown or dark brown (7.5YR 4/4) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common roots; 45 percent pebbles; neutral (pH 6.7); clear wavy boundary.

B-3 to 9 inches; strong brown (7.5YR 5/6) very gravelly loamy sand, brown (7.5YR 5/4) moist ; massive; soft, very friable, slightly sticky and nonplastic; common roots; 55 percent pebbles; neutral (pH 6/6); abrupt irregular boundary.

R-9+ inches; hard ultramafic rock.

Type Location: Oak Knoll District, Klamath National

Forest; Siskiyou County, California; NE 1/4 SE 1/4 Section 7, T. 47 N., R. 11 W.

Range in Characteristics: Depth to a lithic contact is less than 20 inches. Mean annual soil temperature is 35 to 46.o.F. The soil between 8 and 14 inches or at the lithic contact is dry from August 1 to October 15 in most years and moist in some or all parts the rest of the year.

The A horizon is brown, dark brown or strong brown (7.5YR 4/2, 4/4, 4/6). Moist colors are dark brown, brown, dark grayish brown or dark yellowish brown (7.5YR 4/ 2, 4/4; 10YR 4/2, 4/3, 4/4). It is gravelly or very gravelly loamy sand. Rock fragments average 15 to 40 percent. Reaction is slightly acid to neutral.

The B horizon is brown, strong brown or yellowish brown (7.5YR 5/4, 5/6; 10YR 5/4). Moist colors are dark brown, brown, dark yellowish brown or yellowish brown (7. 5YR 4/4, 5/4; 10YR 4/3, 4/4, 5/4). Colors do not meet requirements for a cambic horizon. It is very gravelly or extremely gravelly loamy sand. Rock fragments average 40 to 75 percent. Reaction is slightly acid to neutral.

The R horizon is hard, fractured dunite bedrock.

Use and Vegetation: Use is mainly watershed, range and wildlife habitat. Native vegetation is Jeffrey pine, incense cedar, western white pine, huckleberry oak, California coffeeberry, purple reedgrass, buckwheat, phlox, beargrass, basin wildrye and forbs.

LITHIC XERORTHENTS, GRANITIC

Lithic Xerorthents, granitic, are shallow, excessively drained residual soils formed from granitic rock. They occur on mountain sides slopes. Slopes range from 50 to 90 percent slopes. Mean annual precipitation is 40 to 60 inches and the mean annual temperature is about 51.o.F. Elevations are 1,500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Typical Pedon: Lithic Xerorthent, granitic sandy loam - on a 70 percent south-facing slope at 1,900 feet elevation, under a live oak and mixed conifer stand. (Colors are for dry soil unless otherwise stated.).

O-1 to 0 inches; loose broad leaves.

A-0 to 3 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; massive; friable, slightly sticky and nonplastic; few fine and very fine roots; medium acid (pH 5.9); clear smooth boundary.

C-3 to 7 inches; pale brown (10YR 6/3) sandy loam, yellowish brown (10YR 5/4) moist; massive; friable, slightly sticky and nonplastic; common roots; medium acid (pH 5.9); abrupt irregular boundary.

R-7+ inches; hard granitic bedrock.

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; 1.0 mile east of

Seiad Valley Post Office; Section 12, T. 46 N., R. 12 W.

Range in Characteristics: Depth to a lithic contact is less than 20 inches. Mean annual soil temperature is 47 to 59.o.F. The soil between 10 and 16 inches or at the lithic contact is dry in all parts from July 15 to October 20, and moist in some or all parts the rest of the year.

The A horizon is grayish brown, brown, yellowish brown or light olive brown (10YR 5/2, 5/3, 5/4; 2.5Y 5/2, 5/4). Moist colors are dark brown, dark yellowish brown or olive brown (10YR 3/3, 3/4, 4/3; 2.5Y 4/4). It is loam, sandy loam or loamy fine sand. There are 10 to 30 percent gravels. Reaction is medium acid to neutral.

The C horizon is pale brown, light yellowish brown, very pale brown, light brownish gray or light gray (10YR 6/3, 6/4, 7/3, 7/4; 2.5Y 5/2, 7/2). Moist colors are brown, yellowish brown or light olive brown (10YR 5/3, 5/4; 2.5Y 5/4). It is sandy loam, loamy fine sand or loamy sand. There are 10 to 30 percent gravels. Reaction is medium acid to neutral.

The R horizon is hard fractured granitic bedrock.

Use and Vegetation: Use is primarily for watershed and wildlife habitat. Native vegetation is canyon live oak, madrone, white leaf manzanita, poison oak, Douglas-fir, ponderosa pine and sugar pine.

LITHIC XEROR THENTS, ULTRAMAFIC

Lithic Xerorthents, ultramafic, are very shallow and shallow well drained soils that formed in residuum from serpentinitic rock. These soils occur on mountain sideslopes and ridgetops. Slopes range from 30 to 70 percent. Mean annual precipitation is 50 to 100 inches and mean annual temperature is about 51.o. F. The elevations are 1,500 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Typical Pedon: Lithic Xerorthents, ultramafic gravelly loam - on a 55 percent convex south-facing slope at 4,700 feet elevation, under Jeffrey pine, incense cedar, huckleberry oak, California coffeeberry and pinemat manzanita. (Colors are for dry soil unless otherwise stated.).

C1-0 to 2 inches; light brownish gray (2.5Y 6/2) gravelly loam, dark grayish brown (2.5Y 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; few roots; neutral (pH 6.9); abrupt smooth boundary.

C2-2 to 9 inches; grayish brown (10YR 5/2) very gravelly loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, friable, slightly sticky and nonplastic; few roots; neutral (pH 7.1); abrupt irregular boundary.

R-9+ inches; hard, fractured serpentinitic rock.

Type Location: Ukonom District, Klamath National Forest; Siskiyou County, California; SE 1/4 NE 1/4 Section 35, T. 14 N., R. 4 E.

Range in Characteristics: Depth to a lithic contact is less than 20 inches. Mean annual soil temperature is 47 to 59.o.F. The soil between the depth of 8 to 20 inches or at the lithic contact is dry in all parts from mid-July to mid-October, and moist in some or all parts the rest of the year.

The C1 horizon is light gray or light brownish gray (2.5Y 6/1, 6/2). Moist colors are dark gray or dark grayish brown (2.5Y 4/1, 4/2). It is gravelly loam or very gravelly loam. Rock fragments average 20 to 40 percent. Reaction is neutral.

The C2 horizon is grayish brown or brown (10YR 5/2, 5/3). Moist colors are very dark grayish brown or dark brown (10YR 3/2, 3/3). It is very gravelly loam or extremely gravelly loam. Rock fragments average 40 to 70 percent. Reaction is neutral.

The R horizon is hard, fractured serpentinitic bedrock.

Use and Vegetation: Used mainly for watershed and wildlife habitat. Native vegetation is Jeffrey pine, incense cedar, sugar pine, huckleberry oak, California coffeeberry, pinemat manzanita, beargrass, grasses and forbs.

ENTIC XERUMBREPTS

Entic Xerumbrepts are shallow, well to excessively drained residual soils formed in material weathered from granitic rocks. They occur on upper mountain sideslopes and ridges. Slopes range from 30 to 90 percent. Mean annual precipitation is 35 to 100 inches and the mean annual temperature is about 52.o.F. Elevations are 1,500 to 6,800 feet. The climate is mediterranean, with warm dry summers and cool to cold moist winters.

Typical Pedon: Entic Xerumbrept gravelly loam - on a 50 percent southwest-facing slope at 4,600 feet elevation, under a mixed conifer-shrub cover. (Colors are for dry soil unless otherwise stated.).

A-0 to 5 inches; grayish brown (10YR 5/ 2) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; strongly acid (pH 5.3); clear smooth boundary.

AC- 5 to 14 inches; pale brown (10YR 6/3) gravelly loamy sand, brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; medium acid (pH 6.0); abrupt wavy boundary.

Cr-14+ inches; light yellowish brown (10YR 6/4) coarse sand, yellowish brown (10YR 5/4) moist; massive; hard, firm, nonsticky and nonplastic; medium acid (pH 6.0).

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; NE 1/4 SW 1/4 Section 33, T. 40 S., R. 1 E.

Range in Characteristics: Depth to a paralithic contact is less than 20 inches. Mean annual soil temperature is 39 to 59.o.F. The soil between the depths of 10 and 20 inches or at the paralithic contact is dry in all parts from August 1 to October 15, and moist in some or all parts the rest of the year.

The A horizon is very dark grayish brown, dark grayish brown, grayish brown, brown or yellowish brown (10YR 3/2, 4/2, 5/2, 5/3, 5/4). Moist colors are black, very dark gray, very dark grayish brown or dark brown (10YR 2/1, 3/1, 3/2, 3/3). It is a loam, sandy loam or loamy sand, and may be gravelly. Rock fragments average 5 to 30 percent. Reaction is medium to strongly acid.

The C horizon, if present, is dark brown, brown or light yellowish brown (10YR 4/3, 6/4). Moist colors are very dark grayish brown, brown or dark brown (10YR 3/2, 4/3). It is gravelly loamy sand or loams and with less than 20 percent clay and 10 to 30 percent rock fragments. Reaction is medium acid.

The Cr horizon is soft, weathered granite. Dry colors are light yellowish brown, brownish yellow, very pale brown or yellow (10YR 6/4, 6/6, 7/4, 7/6). Moist colors are yellowish brown, light yellowish brown or brownish yellow (10YR 5/4, 5/6, 6/4, 6/6). The bedrock breaks down to coarse or very coarse sand.

Use and Vegetation: Used for water shed, wildlife and some timber production. Native vegetation is white fir, incense cedar, ponderosa pine, Douglas-fir, black oak, greenleaf manzanita, bush chinquapin, bittercherry, huckleberry oak and snowbrush.

LITHIC CRYOBOROLLS

Lithic Cryoborolls are shallow, somewhat excessively drained residual soils formed in material weathered from serpentinitic and ultramafic rocks. They occur on mountain sideslopes and cirque sidewalls. Slopes range from 30 to 70 percent. Mean annual precipitation is 50 to 80 inches and the mean annual temperature is about 42.o.F. Elevations are 6,200 to 8,500 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Typical Pedon: Lithic Cryoboroll very gravelly loam - on a 60 percent northeast-facing slope at 6,240 feet elevation, under a cover of red fir, western white pine and forbs. (Colors are for dry soil unless otherwise stated).

O-1/2 to 0 inches; scattered conifer needles and broad leaves.

A1-0 to 5 inches; brown (10YR 5/3) very gravelly loam, dark brown (7.5YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; few very fine and fine, and common medium and coarse roots; many very fine and fine interstitial pores; strongly acid (pH 5.5); clear smooth boundary.

A2-5 to 10 inches; yellowish brown (10YR 5/4) gravelly loam, dark brown (7.5YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; few very fine and common fine and medium roots; common very fine and fine interstitial pores; medium acid (pH 6.0); abrupt smooth boundary.

C-10 to 18 inches; yellowish brown (10YR 5/4) very gravelly fine sandy loam, brown (7.5YR 4/2) moist; massive; loose, loose, nonsticky and nonplastic; few very fine and fine roots; many very fine and fine interstitial pores; medium acid (pH 6.0); abrupt irregular boundary.

R-18+inches; hard serpentinitic rock.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; Kangaroo Lake; SW 1/4 NE 1/ 4 Section 14, T. 40 N., R. 7 W.

Range in Characteristics: Depth to a lithic contact is less than 20 inches. Mean annual soil temperature is 32 to 46.o.F, and mean summer soil temperature is 40 to 47.o.F. The soil between the depths of 8 and 14 inches, or at the lithic contact is dry in all parts from August 10 to October 10, and moist in some or all parts the rest of the year. Base saturation is assumed to be greater than 50 percent throughout the soil as a result of the ultrabasic parent material.

The A horizon is grayish brown, brown, or yellowish brown (10YR 4/3, 5/2, 5/3, 5/4). Moist colors are dark brown, very dark brown or very dark grayish brown (7.5YR 3/2; 10YR 2/2, 3/2, 3/3). The soil is gravelly or very gravelly loam or sandy loam. In some pedons, the A horizon lies directly over the hard bedrock. In others, a C horizon separates the A from the lithic contact. Rock fragments average 20 to 40 percent gravels and 10 to 25 percent cobbles. Reaction is medium to strongly acid.

The C horizon is brown, light brown, yellowish brown or light yellowish brown (7.5YR 5/4, 6/4; 10YR 5/4, 6/4). Moist colors are dark brown, brown or dark yellowish brown (7.5YR 3/4, 4/2, 4/4; 10YR 3/4, 4/3, 4/4). It is very gravelly or very cobbly sandy loam, fine sandy loam or loam. Rock fragments average 35 to 50 percent gravels and 20 to 30 percent cobbles. Reaction is medium to strongly acid.

The R horizon is hard, slightly fractured serpentinitized peridotite.

Use and Vegetation: Used for wildlife habitat, watershed and some timber production. Native vegetation is red fir, Jeffrey pine, western white pine, beargrass, phlox, buckwheat and perennial bunchgrass.

LITHIC ARGIXEROLLS

Lithic Argixerolls are shallow, somewhat excessively drained residual soils formed from serpentinitic rocks. These soils occur on mountain sideslopes. Slopes range from 30 to 70 percent. Mean annual precipitation is 45 to 60 inches and the mean annual temperature is about 42.o.F. The elevations are 4,800 to 6,800 feet. The climate is mediterranean, with warm dry summers and cold moist winters.

Typical Pedon: Lithic Argixeroll very gravelly sandy clay loam - on a 40 percent northeast-facing linear slope at 6,640 feet elevation, under a cover of 5 percent forbs and grasses. (Colors are for dry soil unless otherwise stated.).

Surface is paved with gravels and cobbles.

A-0 to 5 inches; brown (7.5 YR 5/2) very gravelly sandy clay loam, dark brown (7.5YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; 50 percent pebbles and 1 percent cobbles; neutral (pH 7.0); clear smooth boundary.

Bt1-5 to 11 inches; brown (7.5YR 5/4) very gravelly silty clay loam, dark brown (7.5YR 3/4) moist; weak to moderate fine subangular blocky structure; soft, very friable, slightly sticky and plastic; common very fine and fine roots; common moderately thick clay films on ped faces, in pores and as bridges; 40 percent pebbles and 2 percent cobbles; neutral (pH 7.0); abrupt smooth boundary.

Cr-11 to 14 inches; soft, weathered serpentinite; abrupt smooth boundary.

R-14+ inches; hard, highly fractured serpentinite.

Type Location: Scott River District, Klamath National Forest; Siskiyou County, California; near Rock Fence Lake; S E 1/4 SE 1/4 Section 12, T. 40 N., R. 7 W.

Range in Characteristics: Depth to a lithic contact is less than 20 inches. The mean annual soil temperature is 35 to 46.o.F. The soil between the depths of 8 and 18 inches or the lithic contact is dry in all parts from August 1 to October 15, and moist in some or all parts the rest of the year. Base saturation is assumed to be greater than 50 percent throughout the soil as a result of the serpentinitic parent material.

The A horizon is brown, strong brown, dark grayish brown, dark yellowish brown or yellowish brown (7. 5YR 5/2, 5/4, 5/6; 10YR 4/2, 4/3, 4/4, 5/3, 5/4). Moist colors are dark brown and very dark grayish brown (7.5YR 3/2, 3/4; 10YR 3/3, 3/2). It is very gravelly or gravelly loam, sandy loam or sandy clay loam. Rock fragments average 40 to 60 percent. Reaction is slightly acid to mildly alkaline.

The B horizon is yellowish brown or brown (10YR 5/4; 7.5YR 5/4). Moist colors are dark brown (10YR 3/3; 7.5YR 3/4). It is very gravelly silty clay loam or very gravelly clay loam. Rock fragments average 35 percent or more. Reaction is slightly acid to mildly alkaline.

A paralithic contact may or may not be present. The lithic contact is hard, fractured metamorphic or serpentinitic bedrock.

Use and Vegetation: Used for wildlife habitat and watershed. Native vegetation is a few Jeffrey pine, western white pine, buckwheat, phlox and annual grass.

TYPIC HAPLOXEROLLS

Typic Haploxe rolls are moderately deep, well drained soils that formed in material weathered from marble and schist. These soils occur on mountain sideslopes and colluvial footslopes. Slopes Range from 30 to 70 percent. The mean annual precipitation is about 40 to 80 inches and the mean annual temperature is about 51.o.F. The elevations are 1,200 to 7,000 feet. The climate is mediterranean, with warm dry summers and cool to cold moist winters.

Typical Pedon: Typic Haploxeroll gravelly loam - on a 70 percent west-facing slope at 4,300 feet elevation, under a cover of Douglas-fir, white fir, incense cedar, huckleberry oak, coffeeberry, snowberry and other shrubs and forbs. (Colors are for dry soil unless otherwise stated.).

O-2 to 0 inches; weakly matted conifer needles.

A1-0 to 1 inch; brown (10YR 4/3) gravelly loam, very dark brown (10YR 2/2) moist; strong very fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine roots; neutral (pH 6.9); slightly effervescent; abrupt smooth boundary.

A2-1 to 5 inches; yellowish brown (10YR 5/4) gravelly loam, dark brown (10YR 3/3) moist; strong very fine granular structure; soft, very friable, slightly sticky and nonplastic; plentiful roots; neutral (pH 6.8); slightly effervescent; clear smooth boundary.

A3-5 to 13 inches; yellowish brown (10YR 5/4) gravelly loam, dark brown (7.5YR 3/2) moist; very weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common roots; neutral (pH 7.0);strongly effervescent; diffuse boundary.

Bw1-13 to 24 inches; yellowish brown (10YR 5/6) very gravelly loam, brown (7.5YR 4/4) moist; weak fine subangular blocky structure; soft, very friable, slightly sticky and nonplastic; common roots; mildly alkaline (pH 7.5); strongly effervescent; gradual wavy boundary.

Bw2-24 to 30 inches; brownish yellow (10YR 6/6) very gravelly loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable,

slightly sticky and slightly plastic; common roots; lime on stones; mildly alkaline (pH 7.5); strongly effervescent; abrupt irregular boundary.

R-30+ inches; hard fractured schist.

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; about 4 1/4 miles west of Tyler Meadows, 2 1/2 miles north of Buckhorn Mountain in the Grider Creek drainage; NE 1/4 NW 1/4 Section 32, T. 45 N., R. 12 W.

Range in Characteristics: Depth to a lithic contact is 20 to 40 inches. The mollic epipedon is 10 to 19 inches thick. The base saturation is greater than 75 percent throughout the upper 30 inches of soil. The mean annual soil temperature is 36 to 59.o.F. The soil between a depth of 7 and 21 inches is dry in all parts from August 1 to October 15 in most years and is moist in some or all parts the rest of the year. Base saturation is assumed to be greater than 50 percent throughout the soil as a result of the parent material.

The A horizon is brown or yellowish brown (10YR 4/3, 5/3, 5/4). Moist colors are very dark brown, very dark grayish brown or dark brown (10YR 2/2, 3/2, 3/3; 7.5YR 3/2). It is a loam, gravelly loam or very gravelly loam with 10 to 60 percent rock fragments. Reaction is neutral.

The Bw horizon is yellowish brown, light yellowish brown and brownish yellow (10Y R 5/4, 5/6, 6/4, 6/6). Moist colors are brown and dark yellowish brown (7.5YR 4/4; 10YR 4/3, 4/4). It is a very gravelly to extremely gravelly loam with 35 to 80 percent rock fragments. Reaction is neutral to mildly alkaline.

The R horizon is hard fractured schist or consolidated marble.

Use and Vegetation: Used for timber production, watershed and wildlife habitat. Native vegetation is Douglas-fir, incense cedar, Pacific yew, white fir, red fir, mountain hemlock, pinemat manzanita, sadler oak, huckleberry oak, bigleaf maple, coffeeberry, snowberry, hazelnut, thimbleberry, wildrose, currant, penstemon, Indian paintbrush, forbs and grasses.

LITHIC HAPLOXEROLLS

Lithic Haploxerolls are very shallow and shallow somewhat excessively drained residual soils that formed from weathered marble, schist, metasedimentary, serpentinitic, and ultramafic rocks. They occur on mountain sideslopes. Slopes range from 30 to 90 percent. Mean annual precipitation is 40 to 70 inches and the mean annual temperature is about 51.0°F. Elevations are 1,200 to 5,000 feet. The climate is mediterranean, with warm dry summers and cool moist winters.

Typical Pedon: Lithic Haploxeroll loam - on a 60 percent south-facing slope at 3,300 feet elevation, under a cover of mixed conifers, hardwoods and shrubs. (Colors are for dry soil unless otherwise stated).

0-2 to 0 inches; loose fresh broad leaves.

A1-0 to 2 inches; brown (10YR 4/3) loam, very dark brown (10YR 2/2) moist; moderate very fine granular structure; soft, very friable, slightly sticky and nonplastic; many roots; effervescent; slightly acid (pH 6.3); clear wavy boundary.

A2-2 to 7 inches; dark yellowish brown (10YR 4/4) loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common roots; effervescent; neutral (pH 7.0); abrupt irregular boundary.

R-7+ inches; hard light gray marble.

Type Location: Oak Knoll District, Klamath National Forest; Siskiyou County, California; NE 1/4 SE 1/4 Section 33, T. 46 N., R. 12 W.

Range in Characteristics: Depth to a lithic contact is less than 20 inches. Mean annual soil temperature is 47 to 59.0°F. The soil between the depths of 6 inches and the lithic contact is dry in all parts from July 15 to October 20 in most years and is moist in some or all parts the rest of the year. Base saturation is assumed to be greater than 50 percent throughout the profile.

The A horizon is dark grayish brown, brown, dark yellowish brown, grayish brown or yellowish brown (10YR 4/2, 4/3, 4/4, 5/2, 5/3, 5/4). Moist colors are dark brown, black, very dark brown, very dark grayish brown or dark brown (7.5YR 3/2; 10YR 2/1, 2/2, 3/2, 3/3). The soil is loam or sandy loam and may be gravelly or very gravelly. Rock fragments average 10 to 50 percent gravels. Reaction is slightly acid to neutral.

The B horizon, if present, is brown, dark yellowish brown or yellowish brown (7.5YR 4/4; 10YR 4/4, 5/3, 5/4). Moist colors are dark brown or very dark grayish brown (7.5YR 3/2; 10YR 3/2, 3/3). The soil is sandy loam, loam or clay loam and may be gravelly or very gravelly. Rock fragments average 10 to 75 percent gravels and less than 5 percent cobbles. Reaction is slightly acid to neutral.

The R horizon is hard, fractured metamorphic or ultramafic rock.

Use and Vegetation: Used for watershed, wildlife habitat, range and some timber production. Native vegetation is canyon live oak, madrone, black oak, Douglas-fir, incense cedar, sugar pine, poison oak, whiteleaf manzanita, western mountain mahogany and annual grasses.

LITHIC XERUMBREPTS

Lithic Xerumbrepts are shallow, excessively drained residual soils that formed in material weathered from acid igneous rocks. They occur on mountain sideslopes. Slopes range from 15 to 90 percent. Mean annual precipitation is 50 to 100 inches and the mean annual temperature is about 42.o.F. Elevations are 4,800 to 6,800 feet. The climate is mediteranean, with warm dry summers and cold moist winters.

Typical Pedon: Lithic Xerumbrept gravelly sandy loam - on a 36 percent complex northeast-facing slope at 5,200 feet elevation, under a cover of white fir, incense cedar, pinemat manzanita, huckleberry oak and forbs. (Colors are for dry soil unless otherwise stated.).

A-0 to 6 inches; very dark grayish brown (10YR 3/2) gravelly sandy loam, black (10YR 2/1) moist; weak very fine granular structure; soft, very friable, slightly sticky and nonplastic; common very fine roots; many very fine interstitial pores; medium acid (pH 5.6); clear smooth boundary.

C-6 to 11 inches; brown (10YR 5/3) very gravelly loamy sand, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; few fine interstitial and vesicular pores; medium acid (pH 5.6); abrupt irregular boundary.

R-11 inches; weathered igneous rock.

Type Location: Happy Camp District, Klamath

National Forest; Siskiyou County, California; 1/4 mile west of Bear Peak; SE 1/4 SW 1/4 Section 14, T. 15 N., R. 5 W.

Range in Characteristics: Depth to a lithic contact is between 10 and 20 inches. Mean annual soil temperature is 35 to 46.o. F. The soil between the depths of 10 inches and the lithic contact is dry from August 1 to October 15 in most years, and is moist in some or all parts the rest of the year.

The A horizon is very dark grayish brown or dark grayish brown (10YR 3/2, 4/2). Moist colors are black or very dark brown (10YR 2/1, 2/2). It is sandy loam or loamy sand with 20 to 40 percent coarse fragments. Reaction is medium to strongly acid. Base saturation is less than 50 percent throughout the epipedon.

The C horizon is grayish brown or brown (10YR 5/2, 5/3). Moist colors are very dark grayish brown or dark brown (10YR 3/2, 3/3). It is very gravelly loamy sand with 35 to 50 percent coarse fragments. Reaction is medium to strongly acid.

The R horizon is hard weathered igneous rock.

Use and Vegetation: Used for watershed, wildlife habitat and some timber production. Native vegetation is white fir, ponderosa pine, incense cedar, greenleaf manzanita, pinemat manzanita, thinleaf huckleberry, huckleberry oak, phlox, sunflower, pink family, Adders tongue, stonecrop and other forbs.

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Glossary

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single mapping unit.

Base saturation. The degree to which material having base exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the exchange capacity.

Basin. A broad structural lowland, commonly elongated and many miles across between mountain ranges.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Cation-exchange capacity (CEC). The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of soil aggregates or lining pores or root channels. Synonyms: clay coat, clay skin.

Coarse fragments. Mineral or rock particles up to 3 inches (2 millimeters to 7.5 centimeters) in diameter.

Cobble. Mineral fragments from 3 to 10 inches in diameter.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the bases of steep slopes.

Color, soil. This is determined by the Munsell color charts, and consists of hue, value, and chroma. Hue

is the dominant spectral (rainbow) color. Value refers to the relative lightness of the color, and chroma is the relative purity or strength of the spectral color. For the soil color 10YR 3/2, 10YR is the hue, 3 is the value, and 2 is the chroma.

Complex, soil. A mapping unit of two or more kinds of soil occurring in such an intricate pattern that they cannot be shown separately on a soil map at the selected scale of mapping and publication.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose. Noncoherent when dry or moist; does not hold together in a mass.

Friable. When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm. When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic. When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky. When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard. When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft. When dry, breaks into powder or individual grains under very slight pressure.

Cemented. Hard; little affected by moistening.

Consociation. A mapping unit in which only one kind of soil or miscellaneous area dominates each delineation. Three-fourths or more of the soils present fit the named soil, or are similar soils. Contrasting inclusions may not exceed 15%. (For example, 166 or 138).

Dump. Dumps are areas of smooth or uneven accumulations or piles of waste rock and general refuse. They are located primarily on floodplains of major rivers or streams in the survey area.

Eolian (Aeolian). As applied to soils, those soils formed from deposits of fine sands and silts which have been transported by the wind. This includes materials from volcanic ejections.

Epipedon. A soil horizon that forms at the surface.

Erosion. The wearing away of the land surface by running water, wind, ice or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. *Synonym:* natural erosion.

Erosion (accelerated). Erosion much more rapid than geological erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature; for example, fire, that exposes a bare surface.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Glacial. As applied to soils, those soils formed from materials deposited from glaciers.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Grus. An accumulation of angular coarse-grained fragments resulting from the granular disintegration of crystalline rocks (esp. granite).

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. The major horizons of mineral soil are as follows:

O Horizon. An organic layer, fresh and decaying plant residue, at the surface of a mineral soil.

A Horizon. The mineral horizon, formed or forming at or near the surface, in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon most of which was originally part of a B horizon.

B Horizon. The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or a combination of these; (2) by prismatic or blocky structure; (3) by redder or browner colors than those in the A horizon; or (4) by a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C Horizon. The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that from which the solum is presumed to have formed. If the material is known to differ from that in the solum, the Arabic number 2 precedes the letter C.

R Layer. Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or B horizon.

Igneous rock. Rocks formed by solidification of hot magma. The coarse-textured intrusive igneous rocks (the granitic type) cooled below the earth's surface. The fine-textured extrusive igneous rocks (andesite, basalt) cooled above the earth's surface.

Inclusion. Soils present within mapping units which differ from the named component(s). They may be very similar or dissimilar from the named components.

Lacustrine. As applied to soils, those soils formed from lake sediments.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition or structure by heat, pressure and movement. Nearly all such rocks are crystalline.

Parent Material. The unconsolidated and more or less chemically weathered mineral or organic matter from which the solum of soil is developed by pedogenic processes.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from

about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Phase, soil. A subdivision of a soil family, subgroup or other unit in the soil classification system based on differences in the soil that affect its management. The differences are too small, however, to justify separate taxonomic units. The phases used in this survey are based on differences in rock fragments, parent material, climate or depth.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as:

Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, gravel, cobbles, stones and boulders.

Runoff. That portion of the precipitation on an area which is discharged from the area through stream channels. That which is lost without entering the soil is called surface runoff and that which enters the soil before reaching the stream is called ground-water runoff or seepage flow from groundwater.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermedi-

ate types. Some wind-deposited sand is consolidated into sandstone.

Serpentinite. A rock consisting almost entirely of serpentine minerals derived from the alteration of previously existing olivine and pyroxene minerals.

Shot. Rounded particles 1 to 2 millimeters in size composed of iron oxide or gibbsite that resembles shotgun pellets.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Soil. A natural, three-dimensional body at the earth's surface that is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in mature soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristics of the soil are largely confined to the solum.

Stone. Rock fragments greater than 10 inches and less than 24 inches in diameter.

Stratified. Arranged in strata, or layers. The term refers to geologic material. Layers in soils that result from the processes of soil formation are called horizons; those inherited from the parent material are called strata.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining aggregates. The principal forms of soil structure are: platy (laminated), prismatic (vertical axis of aggregates longer than horizontal), columnar (prisms with rounded tops), blocky (angular or subangular) and granular (spheroids). Structureless soils are either single grained (each

grain by itself, as in dune sand), or massive (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea. A stream terrace is frequently called a second bottom, in contrast with a flood plain, and is seldom subject to overflow. A marine terrace, generally wide, was deposited by the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam,

silty clay loam, sandy clay, silty clay and clay. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse", "fine", or "very fine".

Ultramafic (or Ultrabasic) rocks. Igneous rocks containing less than 45% silica; containing virtually no quartz or feldspar and composed essentially of iron-magnesian silicates, metal oxides and sulfides and native metals, or of all three.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

TABLE 5. - Map Unit Legend, Area and Proportionate Extent

Map Symbol	Map Unit Name	Acres	Percent
101	Aiken family, 15 to 50 percent slopes	3,336	0.2
102	Aiken family - Dumps, mine tailings association, 2 to 30 percent slopes	1,557	0.1
103	Avis-Oosen families complex, 15 to 50 percent slopes	27,488	1.6
104	Belzar - Wintoner, pumice overburden families complex, 2 to 15 percent slopes	19,901	1.1
105	Belzar- Wintoner, pumice overburden families complex, 15 to 50 percent slopes	17,706	1.0
106	Bluesprin family - Lithic Mollic Haploxeralfs association, 30 to 70 percent slopes	14,214	0.8
107	Buell family, 2 to 30 percent slopes	5,281	0.3
108	Cinder lands	3,540	0.2
109	Clallam family, deep, 15 to 70 percent slopes	21,635	1.2
110	Clallam family, very deep 9 to 70 percent slopes	8,558	0.5
111	Clallam family, deep - very deep association , 2 to 50 percent slopes	4,918	0.3
112	Clallam, deep - Deadwood families association, 50 to 90 percent slopes	164,897	9.3
113	Clallam, deep - Holland families association, 30 to 70 percent slopes	66,858	3.8
114	Clallam, deep - Goldridge, gravelly families association, 30 to 90 percent slopes	58,239	3.3
115	Clallam family, very deep - Riverwash association, 0 to 15 percent slopes	7,241	0.4
116	Coboc - Holland families association, 2 to 15 percent slopes	2,434	0.1
117	Deadfall family - Lithic Cryoborolls association, 30 to 70 percent slopes	10,150	0.6
118	Deadwood - Clallam, deep families association, 50 to 90 percent slopes	127,358	7.1

Map Symbol	Map Unit Name	Acres	Percent
119	Deadwood family - Rock outcrop association, 50 to 90 percent slopes	34,821	2.0
120	Deetz family, 2 to 15 percent slopes	881	0.0
121	De Masters - Smarts families association, 9 to 50 percent slopes	14,823	0.8
122	Dubakella family, 30 to 70 percent slopes	12,860	0.7
123	Endlich - Buell families association, 15 to 70 percent slopes	8,446	0.5
124	Entic Xerumbrepts - Gerle family association, 30 to 90 percent slopes	26,416	1.5
125	Entic Xerumbrepts - Gerle family - Tallac family association, 15 to 50 percent slopes	15,244	0.9
126	Etchen - Neuske families complex, 9 to 30 percent slopes	7,559	0.4
127	Gerle family - Entic Xerumbrepts association, 50 to 90 percent slopes	34,600	2.0
128	Gilligan - Chawanakee families association, 30 to 90 percent slopes	45,355	2.6
129	Gilligan - Goldridge families association, 30 to 90 percent slopes	55,954	3.2
130	Gilligan - Holland families association, 15 to 70 percent slopes	16,912	1.0
131	Goldridge family, gravelly, 15 to 50 percent slopes	6,393	0.4
132	Goldridge, gravelly - Clallam, deep - Prather families association, 30 to 90 percent slopes	7,965	0.5
133	Goldridge - Gilligan families association, 15 to 90 percent slopes	2,387	0.1
134	Guemes family, 30 to 90 percent slopes	6,825	0.4
135	Haplic Durixeralfs, 0 to 5 percent slopes	1,053	0.1
136	Haplic Durixeralfs - Morical family association, 2 to 15 percent slopes	599	0.0

Map Symbol	Map Unit Name	Acres	Percent
137	Helvetia family, 15 to 50 percent slopes	1,732	0.1
138	Holland family, 15 to 50 percent slopes	3,884	0.2
139	Holland - Aiken families association, 2 to 15 percent slopes	2,809	0.2
140	Holland - Aiken - Clallam, deep families complex, 15 to 70 percent slopes	2,839	0.2
141	Holland - Clallam, deep - Coboc families association, 15 to 70 percent slopes	48,077	2.7
142	Holland - Gilligan families association, 30 to 90 percent slopes	18,612	1.1
143	Holland - Skalan families association, 15 to 30 percent slopes	22,397	1.3
144	Holland - Skalan families association, 30 to 70 percent slopes	40,518	2.3
145	Inville family, 15 to 50 percent slopes	10,928	0.6
146	Inville - Wintoner families complex, 2 to 15 percent slopes	26,230	1.5
147	Inville - Wintoner families association, 30 to 50 percent slopes	8,961	1.5
148	Jayar family, 30 to 70 percent slopes	4,921	1.3
149	Jayar family - Lithic Mollic Haploxeralfs association, 30 to 70 percent slopes	843	1.0
150	Jayar - Woodseye families association, 30 to 70 percent slopes	73,639	4.1
151	Kang - Beaughton families association, 9 to 90 percent slopes	11,381	0.6
152	Lava flows	2,972	0.2
153	Lithic Haploxeralfs - Holland family association, 30 to 70 percent slopes	14,129	0.8
154	Lithic Mollic Haploxeralfs - Bluesprain family association, 30 to 90 percent slopes	1,872	0.1

Map Symbol	Map Unit Name	Acres	Percent
155	Lithic Mollic Haploxerafls - Dubakella family association, 15 to 70 percent slopes	8,418	0.5
156	Lithic Mollic Haploxerafls - Rock outcrop complex, 30 to 70 percent slopes	1,071	0.1
157	Lithic Ruptic-Xerochreptic Haploxerafls - Olete family association, 30 to 90 percent slopes	31,415	1.8
158	Lithic Ruptic-Xerochreptic Haploxerafls - Parks family association, 30 to 90 percent slopes	5,028	0.3
159	Lithic Xerorthents, cold - Rock outcrop complex, 30 to 90 percent slopes	1,472	0.1
160	Lithic Xerorthents, granitic - Rock outcrop association, 50 to 90 percent slopes	1,942	0.1
161	Lithic Xerorthents, ultramafic, 30 to 70 percent slopes	1,004	0.1
162	Lithic Xerumbrepts - Rock outcrop association, 15 to 90 percent slopes	15,167	0.9
163	Merkel family, 2 to 30 percent slopes	999	0.1
164	Morical - Worley families association, 2 to 50 percent slopes	2,130	0.1
165	Nanny family, 2 to 30 percent slopes	18,268	1.0
166	Nanny family, 30 to 50 percent slopes	19,830	1.1
167	Neuske - Etchen families complex, 2 to 9 percent slopes	13,835	0.8
168	Olete family - Lithic Ruptic-Xerochreptic Haploxerafls association, 30 to 90 percent slopes	6,919	0.4
169	Oosen - Avis families complex, 2 to 15 percent slopes	19,084	1.1
170	Ovall family - Entic Xerumbrepts - Zeibright family association, 30 to 70 percent slopes	7,143	0.4
171	Parks family - Lithic Ruptic-Xerochreptic Haploxerafls association, 30 to 90 percent slopes	3,757	0.2
172	Quam family, 0 to 5 percent slopes	9,617	0.5

Map Symbol	Map Unit Name	Acres	Percent
173	Redcap - Stonewell families association, 2 to 30 percent slopes	3,834	0.2
174	Riverwash	5,146	0.3
175	Rock outcrop - Teewinot family association, 50 to 90 percent slopes	9,454	0.5
176	Rogue - Jayar families association, 30 to 50 percent slopes	6,270	0.4
177	Ruclick - Cowiche families association, 2 to 9 percent slopes	11,803	0.7
178	Ruclick - Deven families complex, 0 to 9 percent slopes	21,183	1.2
179	Ruclick - Deven families complex, 15 to 30 percent slopes	974	0.1
180	Sheld - Iller families complex, 5 to 50 percent slopes	60,428	3.3
181	Sheld family - Lava flows complex, 30 to 70 percent slopes	4,115	0.2
182	Skalan - Clallam, deep families association, 30 to 70 percent slopes	23,496	1.3
183	Skalan - Clallam, deep - Decy families association, 15 to 70 percent slopes	26,314	1.5
184	Skalan family - Lithic Haploxerafls association, 30 to 90 percent slopes	27,425	1.6
185	Skalan family - Lithic Mollic Haploxerafls association, 30 to 70 percent slopes	22,786	1.3
186	Tallac - Nanny families association, 9 to 30 percent slopes	1,315	0.1
187	Tallac family - Ultic Haploxerafls association, 15 to 50 percent slopes	14,829	0.8
188	Tangle family, 15 to 50 percent slopes	8,817	0.5
189	Teewinot - Endlich families association, 50 to 90 percent slopes	31,646	1.8

Map Symbol	Map Unit Name	Acres	Percent
190	Teewinot family - Rock outcrop association, 50 to 90 percent slopes	8,122	0.5
191	Toadlake family - Lithic Argixerolls association, 30 to 70 percent slopes	4,957	0.3
192	Trojan - Kilmerque families association, 2 to 9 percent slopes	17,937	1.0
193	Typic Haploxerolls - Lithic Haploxerolls - Rock outcrop complex, 30 to 90 percent slopes	2,937	0.2
194	Vipont - Hades families association, 15 to 50 percent slopes	13,723	0.8
195	Washoe family, 0 to 5 percent slopes	5,019	0.3
196	Weitchpec family - Lithic Haploxeralfs association, 30 to 90 percent slopes	7,320	0.4
197	Woodseye family - Rock outcrop association, 50 to 90 percent slopes	32,519	1.8
198	Woodseye - Jayar families association, 30 to 70 percent slopes	58,246	3.2
199	Mollic Palexeralf - Mollic Haploxeralfs association, 15 to 50 percent slopes	2,202	0.1
TOTALS:		1,761,065	100.0

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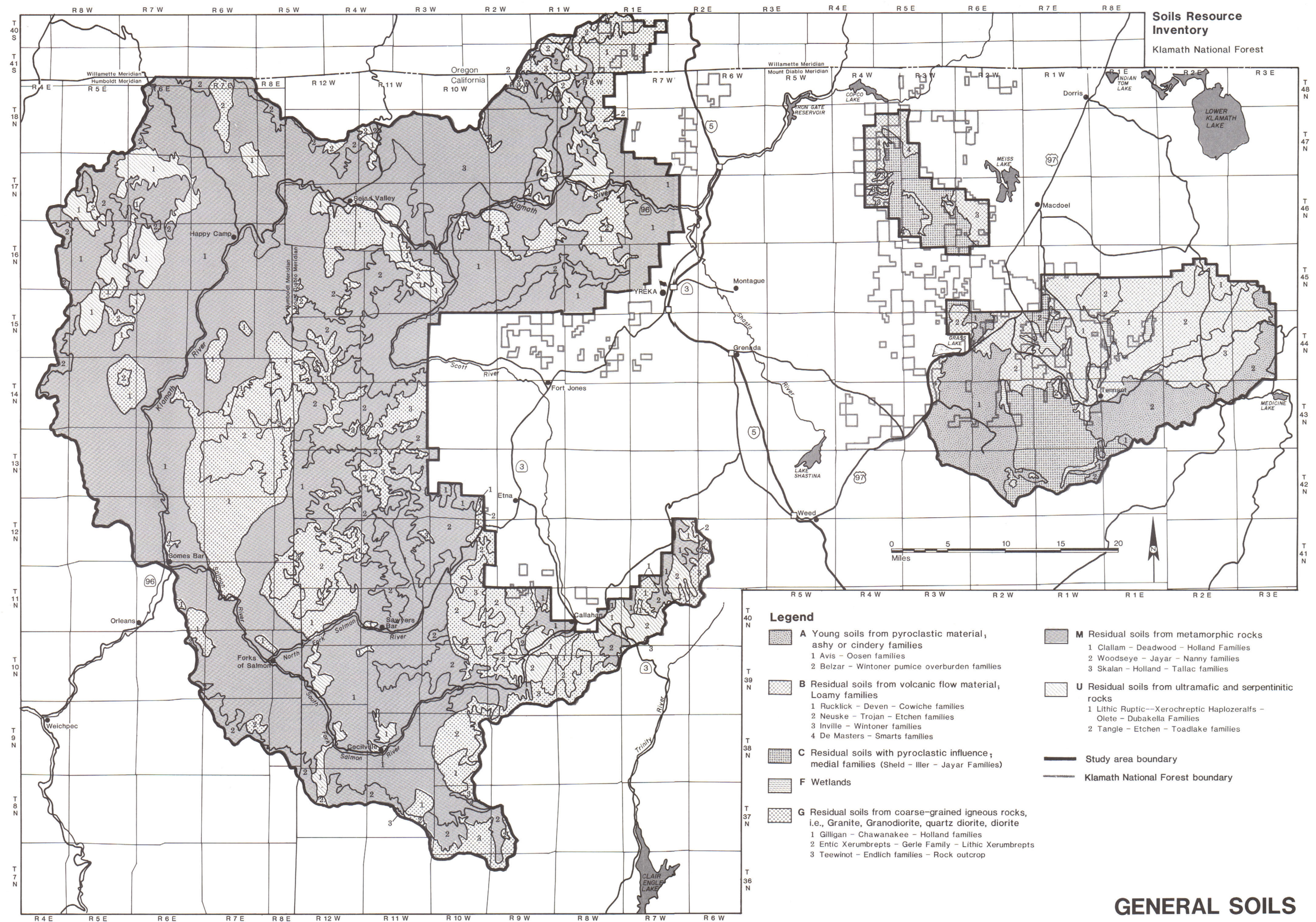
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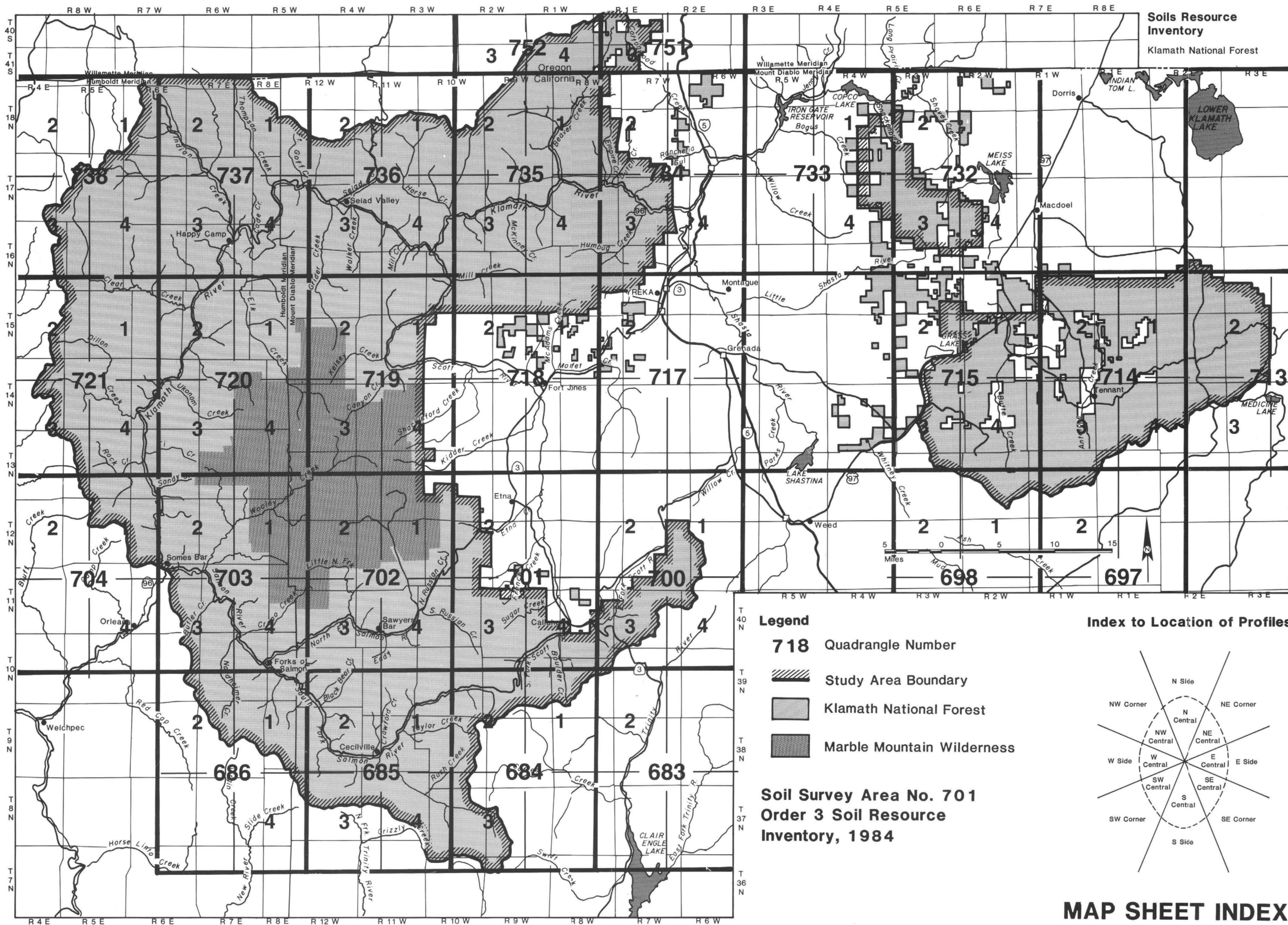
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Office of the Assistant Secretary for Civil Rights
1400 Independence Avenue, SW
Washington, D.C. 20250-9410;
- (2) fax: (202) 690-7442; or
- (3) email: program.intake@usda.gov.

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GENERAL SOILS



Soils Resource Inventory
Klamath National Forest

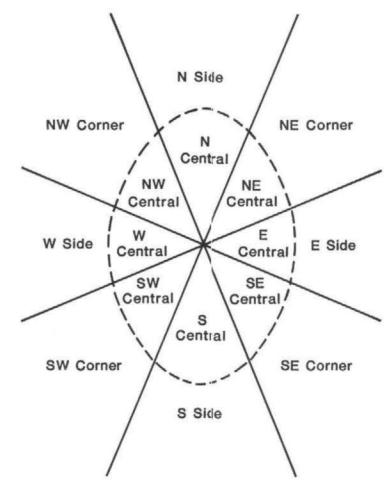
Location of Profiles Representative of Soil Series

Series	Map Sheet	Location
Aiken	736	SW Corner
Avis	715	S Side
Beaughton	700	SW Corner
Belzar	714	S Central
Bluesprin	685	W Central
Buell	719	SE Corner
Chawanakee	735	NE Corner
Clallam	720	W Side
Coboc	736	SW Central
Cowiche	714	N Side
Deadfall	752	S Side
Deadwood	736	W Side
Decy	735	W Central
Deetz *	699	NE Central
DeMasters	733	E Side
Deven	714	NW Corner
Dubakella	736	SW Corner
Endlich	752	S Side
Etchen	714	W Side
Gerle	737	N Side
Gilligan	685	SE Corner
Goldridge	721	E Side
Guemes	737	SW Corner
Hades	714	N Side
Helvetia	701	S Side
Holland	737	E Central
Iller	715	N Central
Inville	732	S Central
Jayar	737	N Side
Kang	700	SW Corner
Kilmerque	715	E Side
Merkel	700	SW Central
Morical	700	SW Central
Nanny	702	NE Corner
Neuske	714	W Central
Olete	721	N Side
Oosen	715	S Side
Ovall	736	SW Corner
Parks	736	N Central
Prather	704	E Side
Quam	714	N Central
Redcap	713	W Central
Rogue	686	N Central
Rucklick	714	N Central
Sheld	732	SW Corner
Skalan	721	NE Corner
Smarts	733	NE Central
Stonewell *	713	SW Corner
Tallac	735	NW Corner
Tangle	700	NE Central
Teewinot	738	S Central
Toadlake	700	S Central
Trojan	715	NE Central
Vipont	714	N Side
Washoe	714	NW Central
Weitchpec	721	E Side
Wintoner, pumice overburden	713	SW Corner
Woodseye	737	SW Corner
Worley	700	W Central
Zellbright	751	SW Corner
Mollic Palexeralf	700	S Central
Haplic Durixeralf	715	SW Corner
Lithic Haploxeralf	685	NE Central
Lithic Mollic Haploxeralf	700	SW Central
Lithic Ruptic - Xerochreptic Haploxeralf	736	N Side
Mollic Haploxeralf	700	Center
Ultic Haploxeralf	735	W Side
Lithic Xerorthent, Cold	736	NW Corner
Lithic Xerorthent, Granitic	736	SW Corner
Lithic Xerorthent, Ultramafic	721	SW Corner
Entic Xerumbrept	721	E Central
Lithic Xerumbrept	737	S Central
Lithic Argixerol	700	S Central
Lithic Cryoboroll	700	S Central
Lithic Haploxeroll	736	SW Corner
Typic Haploxeroll	719	NW Corner

- Legend**
- 718 Quadrangle Number
 - Study Area Boundary
 - Klamath National Forest
 - Marble Mountain Wilderness

**Soil Survey Area No. 701
Order 3 Soil Resource
Inventory, 1984**

Index to Location of Profiles



Each 15' quadrangle is numbered in the center. The four 7-1/2' maps in each are numbered from 1 to 4 counterclockwise starting with the NE quarter.

For example, 720-3 refers to the southwest quarter of 15' quadrangle 720.

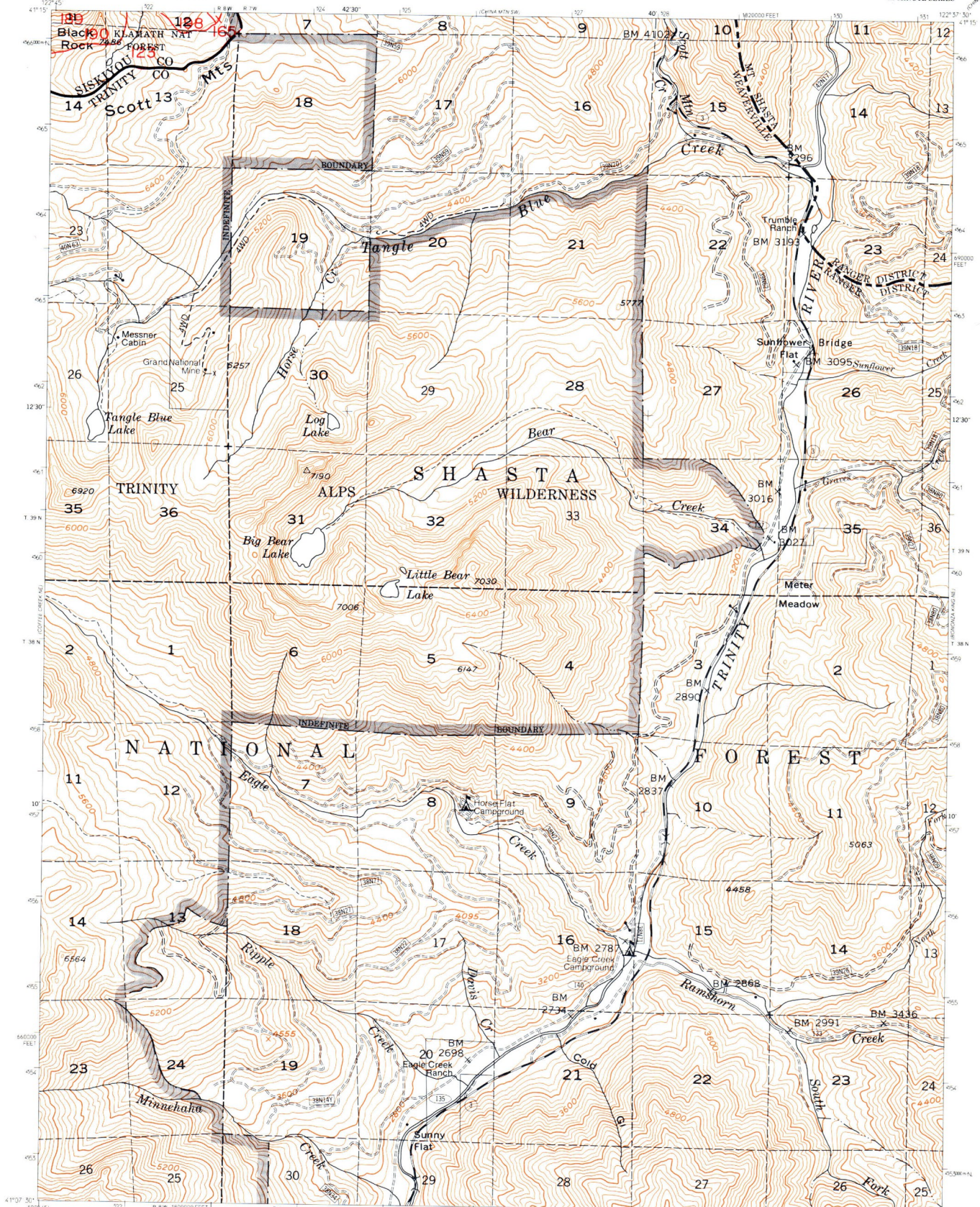
MAP SHEET INDEX

*These soil series are located outside the survey area but adjacent to the soil survey boundary.

Klamath National Forest
Order 3 Soil Survey
1982

BONANZA KING NW
7.5 MINUTE SERIES

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR FOREST SERVICE USE

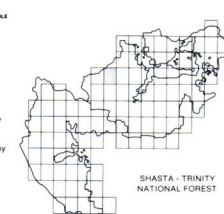
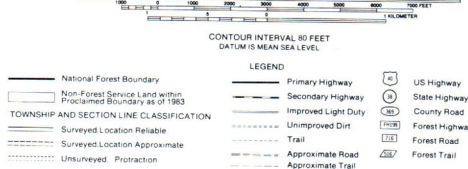


Base map prepared by the USGS
Polyconic projection, 1927 North American datum
10,000 foot grid based on California coordinate system,
zone 1
1000 meter Universal Transverse Mercator grid, zone 10

INTERMEDIATE EDITION
Modification to USGS base map by Geomatrix Service
Center from 1982 1:40,000 Forest Service photography and
1982 correction guides furnished by the Pacific Southwest
Region



CONTOUR INTERVAL 80 FEET
DATUM IS MEAN SEA LEVEL



BONANZA KING NW
N4107.5-W12237.5/5
REVISED 1984

683-2C

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR FOREST SERVICE USE

COFFEE CREEK NE
7.5 MINUTE SERIES



Base map prepared by the USGS
Polyconic projection, 1927 North American datum
1:62,500 scale and based on California coordinate system,
zone 10
1:62,500 scale Universal Transverse Mercator grid, zone 10

INTERMEDIATE EDITION

Modification to USGS base map by Geomatrix Service
Center from 1982 1:62,500 Forest Service photography and
1982 correction guides furnished by the Pacific Southwest
Region

UTM GRID AND MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

National Forest Boundary
Non-Forest Service Land within
Proclaimed Boundary as of 1983
TOWNSHIP AND SECTION LINE CLASSIFICATION
Surveyed Location Reliable
Surveyed Location Approximate
Unsurveyed Protraction

CONTOUR INTERVAL 80 FEET
DATUM IS MEAN SEA LEVEL

LEGEND

Primary Highway
Secondary Highway
Improved Light Duty
Unimproved Dirt
Trail
Approximate Road
Approximate Trail

US Highway

State Highway

County Road

Forest Highway

Forest Road

Forest Trail










COFFEE CREEK NE
N4107-S-W12245-T-5
REVISED 1984

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE





ALAN)



CONTOUR INTERVAL 40 FEET

 Primary Highway
 Secondary Highway
 Improved Road, Paved
 Improved Road, Gravel
 Unimproved Road, Native Surface
 (includes 4WD/not maintained for
 passenger cars)
 Unimproved Road
 Trail

ROUTE MARKER:

-  National Forest, Well Maintained for Passenger Cars
-  National Forest, Maintained for Passenger Cars
-  National Forest, Not Maintained for Passenger Cars
-  National Forest Trail

702-4	701-3	701-4
685-1	684-2	684-3
685-4	684-3	684-4

NA107.5—W12252.5/7.5

684.2

004-2



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY COMPILED FROM AERIAL PHOTOGRAPHS TAKEN 1974 AND 1980
FIELD CHECKED 1982 MAP EDITED 1986
PROJECTION LAMBERT CONFORMAL CONIC
GRID 100,000-FOOT STATE GRID Ticks CALIFORNIA ZONE 1
VERTICAL DATUM NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM 1983 NORTH AMERICAN DATUM OF 1983
To place on the predicted North American Datum of 1983, move the projection lines as shown by dashed corner ticks
(1.19 meters north 1.14 meters east)
Modification to the USGS provisional base map by the
Geomatics Service Center from 1989 aerial
photography and 1990 correction guides furnished by
the Pacific Southwest Region
Landmark revised according to additional Forest Service advice

TOPOGRAPHIC AND SECTION LINE CLASSIFICATION
National Forest Boundary
Non-National Forest System Land
Surveyed, Location Approximate
Surveyed, Location Questionable
Unsurveyed
Locked Gate

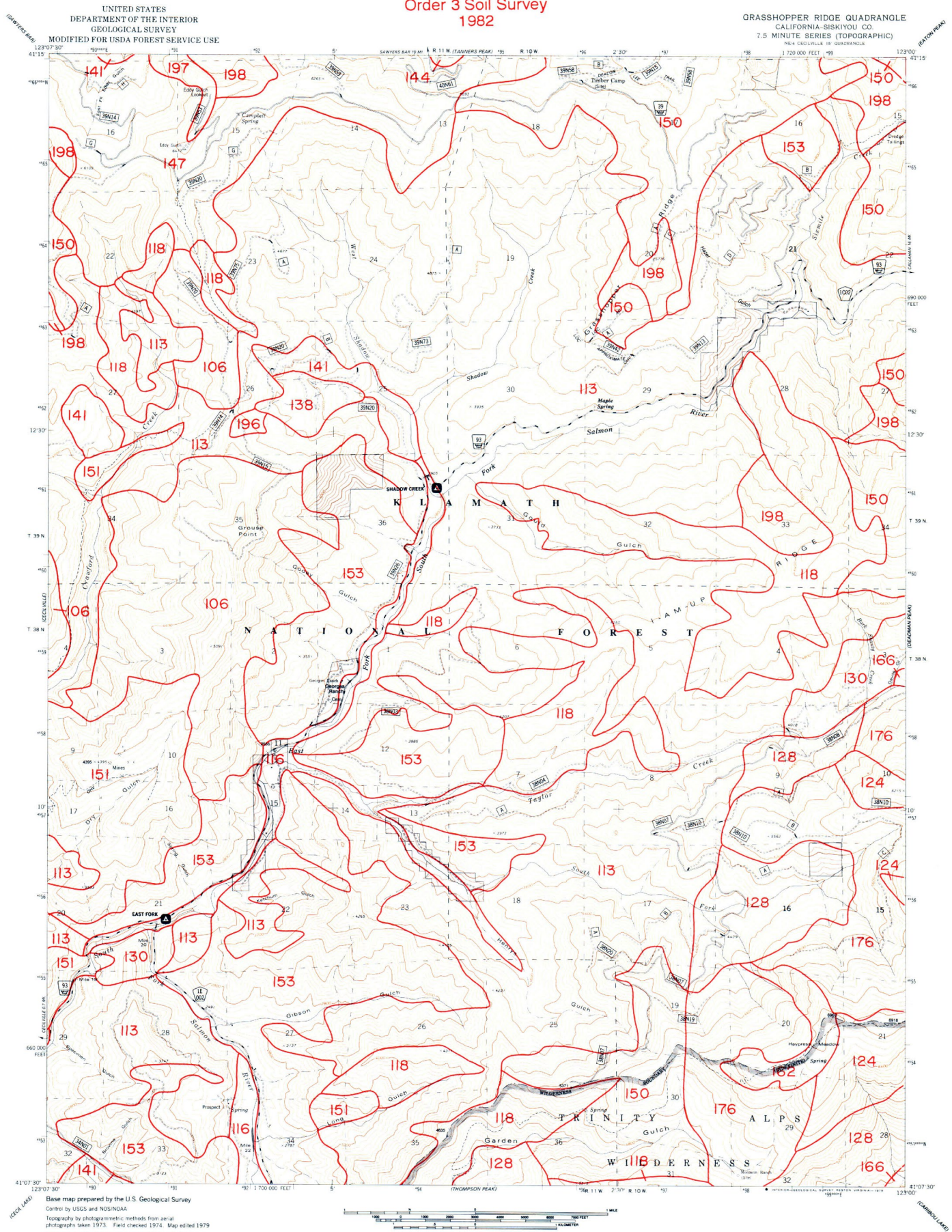
CONTOUR INTERVAL 40 FEET
Primary Highway
Secondary Highway
Improved Road, Paved
Improved Road, Gravel
Unimproved Road, Native Surface
(includes 4WD not maintained for
passenger cars)
Unimproved Road
Trail

ROUTE MARKERS
National Forest, Well Maintained
for Passenger Cars
National Forest, Maintained
for Passenger Cars
National Forest, Not Maintained
for Passenger Cars
National Forest Trail

685.1	684.2	684.1
684.4	684.3	684.4
684.1	684.2	684.1

Klamath National Forest Order 3 Soil Survey 1982

GRASSHOPPER RIDGE QUADRANGLE
CALIFORNIA-SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
NE 4 CECILLE 15 QUADRANGLE
1:250,000 FEET



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial
photographs taken 1973. Field checked 1974. Map edited 1979
Projection and 10,000-foot grid ticks. California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American datum
To place on the predicted North American Datum 1983
move the projection lines 15 meters north and
95 meters east as shown by dashed corner ticks
Land lines are omitted because of insufficient data
Modifications to the USGS base map by the Geomatics
Service Center from 1989 aerial photography and 1990
correction guides furnished by the Pacific Southwest Region
Landmark revised according to additional Forest Service evidence



TOWNSHIP AND SECTION LINE CLASSIFICATION
Surveyed, Location Reliable
Surveyed, Location Approximate
Surveyed, Location Questionable
Unsurveyed
Locked Gate

**CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929**
Primary Highway
Secondary Highway
Improved Road, Paved
Improved Road, Gravel
Unimproved Road, Native Surface
(includes 4WD not maintained for
passenger cars)
Unimproved Road
Trail

ROUTE MARKERS
National Forest, Well Maintained
for Passenger Cars
National Forest, Maintained
for Passenger Cars
National Forest, Not Maintained
for Passenger Cars
National Forest Trail

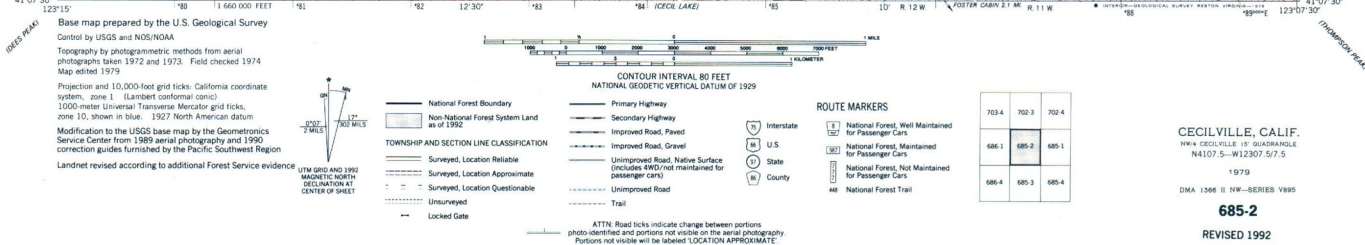
702.3	702.4	702.5
685.2	685.1	684.2
685.3	685.4	684.3

GRASSHOPPER RIDGE, CALIF.
NE 4 CECILLE 15 QUADRANGLE
N4107.5-W123007.5
1979
DMA 1366 II NE-SERIES 1985
685-1

REVISED 1992

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

CECILVILLE QUADRANGLE
CALIFORNIA—SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
NW/4 CECILVILLE 15' QUADRANGLE



Klamath National Forest Order 3 Soil Survey 1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR FOREST SERVICE USE

CECIL LAKE QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
SHEET CECILVILLE 15 QUADRANGLE



Base map prepared by the U.S. Geological Survey

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs taken 1973-72. Field checked 1974

Map revised 1979

Projection and 10,000-foot grid ticks: California coordinate system, zone 1 (Lambert conformal conic)

1000-meter Universal Transverse Mercator grid ticks, zone 10, shown in blue. 1927 North American datum

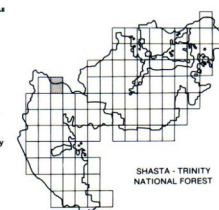
Modification to USGS base map by Geomatrix Service Center from 1982 1:40,000 Forest Service photography and 1982 correction guides furnished by the Pacific Southwest Region

UTM GRID AND 1983 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 80 FEET
DATUM IS MEAN SEA LEVEL

LEGEND

- | | | |
|---|--|---|
| <ul style="list-style-type: none"> National Forest Boundary Non-Forest Service Land within Proclamation Boundary as of 1983 TOWNSHIP AND SECTION LINE CLASSIFICATION Surveyed Location Reliable Surveyed Location Approximate Unsurveyed, Protraction | <ul style="list-style-type: none"> Primary Highway Secondary Highway Improved Light Duty Unimproved Dirt Trail Approximate Road Approximate Trail | <ul style="list-style-type: none"> US Highway State Highway County Road Forest Highway Forest Road Forest Trail |
|---|--|---|

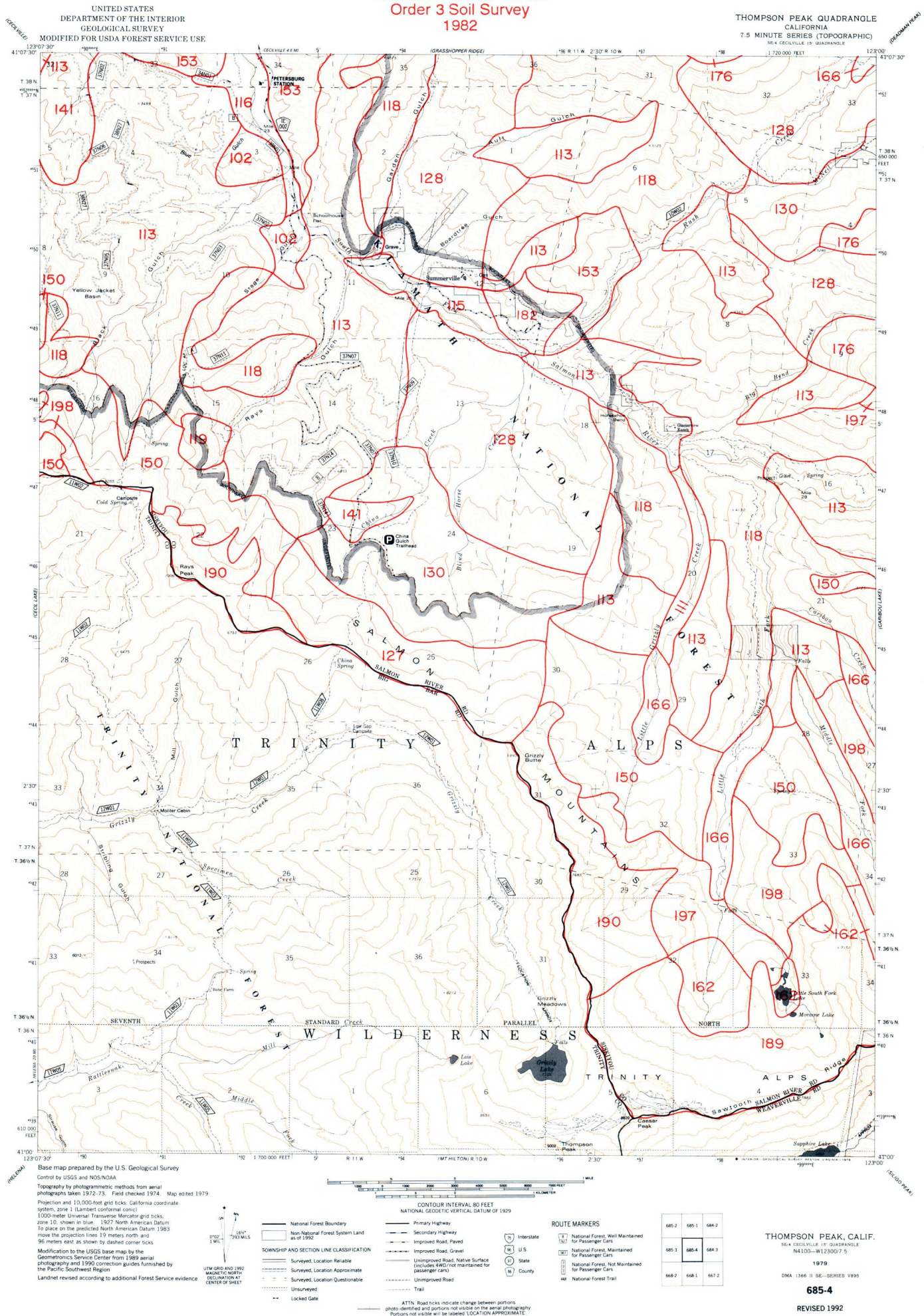


CECIL LAKE, CALIF.
SHEET CECILVILLE 15 QUADRANGLE
N4100-W12307-5/7-5
REVISED 1984

685-3C

Klamath National Forest
Order 3 Soil Survey
1982

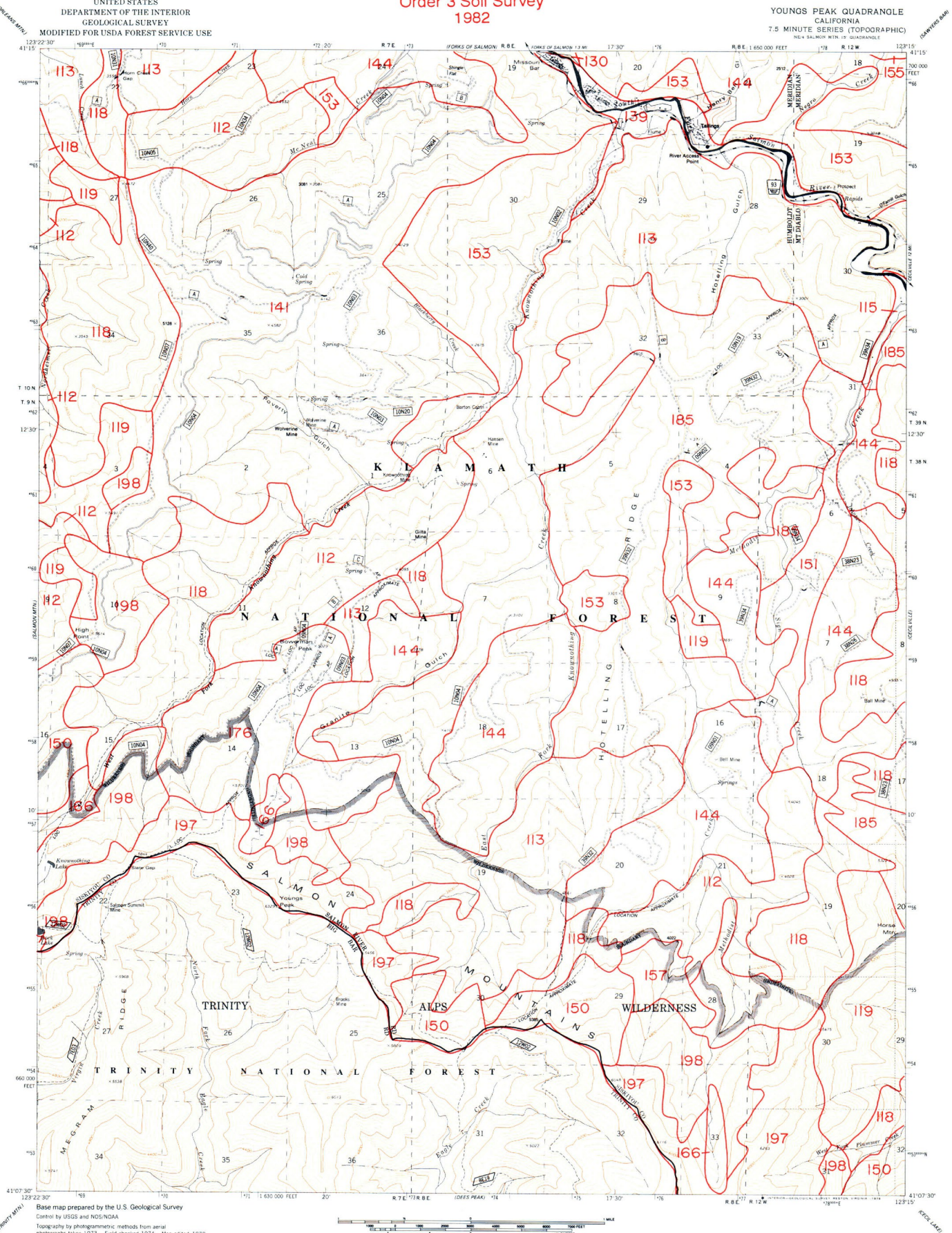
THOMPSON PEAK QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
U.S. GEOLOGICAL SURVEY



Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

YOUNGS PEAK QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
NE 1/4 SALMON MTS. 19 QUADRANGLE



Base map prepared by the U.S. Geological Survey
Control by USGS and NGS/NOAA

Topography by photogrammetric methods from aerial
photographs taken 1973. Field checked 1974. Map edited 1979.
Projection and 1:50,000 foot grid ticks: California coordinate
system, zone 10 (Lambert conformal conic).
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American Datum.
To place on the predicted North American Datum 1983
move the projection lines 20 meters north and
95 meters east as shown by dashed corner ticks.

Modification to the USGS base map by the Geomorphics
Service Center from 1989 aerial photography and 1990
correction guides furnished by the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



TOWNSHIP AND SECTION LINE CLASSIFICATION

- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Surveyed, Location Questionable
- Unsurveyed
- Locked Gate

CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

ROUTE MARKERS

- Primary Highway
- Secondary Highway
- Improved Road, Paved
- Improved Road, Gravel
- Unimproved Road, Native Surface (includes 4WD not maintained for passenger cars)
- Unimproved Road
- Trail

ROUTE MARKERS

- National Forest, Well Maintained for Passenger Cars
- National Forest, Maintained for Passenger Cars
- National Forest, Not Maintained for Passenger Cars
- National Forest Trail

703.3	703.4	703.5
686.2	686.1	686.2
686.3	686.4	686.5

YOUNGS PEAK, CALIF.
NE 1/4 SALMON MTS. 19 QUADRANGLE
N4107.5-W12315.7.5
1979

DMA 1368 11 NE-SERIES 1989

686-1

REVISED 1992

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

1246 L. SE
10101 LANS-

THE NINE
KINGS OF SALMON



Topography by photogrammetric methods from aerial photographs taken 1972. Field checked 1974. Map edited 1978.
Projection and 10,000-foot grid ticks: California coordinate system, zone 1 (Lambert conformal conic).
1000-meter Universal Transverse Mercator grid ticks, zone 10, shown in blue. 1927 North American datum.
Modification to USGS base map by the USDA Forest Service, Geomatics Service Center from 1988-89 aerial photography and 1990 correction guides furnished by the Pacific Southwest Region.
Landnet revised according to additional Forest Service evidence.



 Primary Highway
 Secondary Highway
 Improved Road
 Improved Road
 Improved Road
 Unimproved Road
 Trail
 Locked Gate

- ☐ Paved
- ☐ Gravel
- ☐ Dirt
- ☐ Mud, Dirt

Interstate
U.S. High
State High
County R
Primary R
Forest Ro
Forest Tr

- Highway
- Highway
- Highway
- Road
- Forest Road
- Road
- Trail

704-40
687-10
687-40

703 3C
586 2C
686 3C

703-4C
606-1C
606-4C

SA

ALMO
W-4 SALM
N410
DMA 136

686

TN., C
 15' GUAR
 12322.5
 78
 Y-SERIE
 -2C

CALIF
GRANITE
7.5
S V895

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR FOREST SERVICE USE

DEES PEAK QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
SEA SALINITY WITH 15 QUADRANGLE



Base map prepared by the U.S. Geological Survey

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial

photographs taken 1972. Field checked 1974. Map edited 1978

Projection and 10,000-foot grid ticks. California coordinate

system, zone 1 (Lambert conformal conic)

1000-meter Universal Transverse Mercator grid ticks,

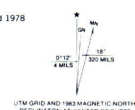
zone 10, shown in blue. 1927 North American datum

Modification to USGS base map by Geomatics Service

Center from 1982 1:40,000 Forest Service photography and

1982 correction guides furnished by the Pacific Southwest

Region



National Forest Boundary
Non-Forest Service Land within
Proclaimed Boundary as of 1983
TOWNSHIP AND SECTION LINE CLASSIFICATION
Surveyed Location Reliable
Surveyed Location Approximate
Unsurveyed Location Approximate
Unsurveyed Location Approximate

CONTOUR INTERVAL 80 FEET
DATUM IS MEAN SEA LEVEL

LEGEND

Primary Highway
Secondary Highway
Improved Light Duty
Unimproved Dirt
Trail
Approximate Road
Approximate Trail

US Highway

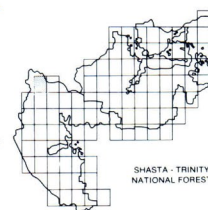
State Highway

County Road

Forest Highway

Forest Road

Forest Trail



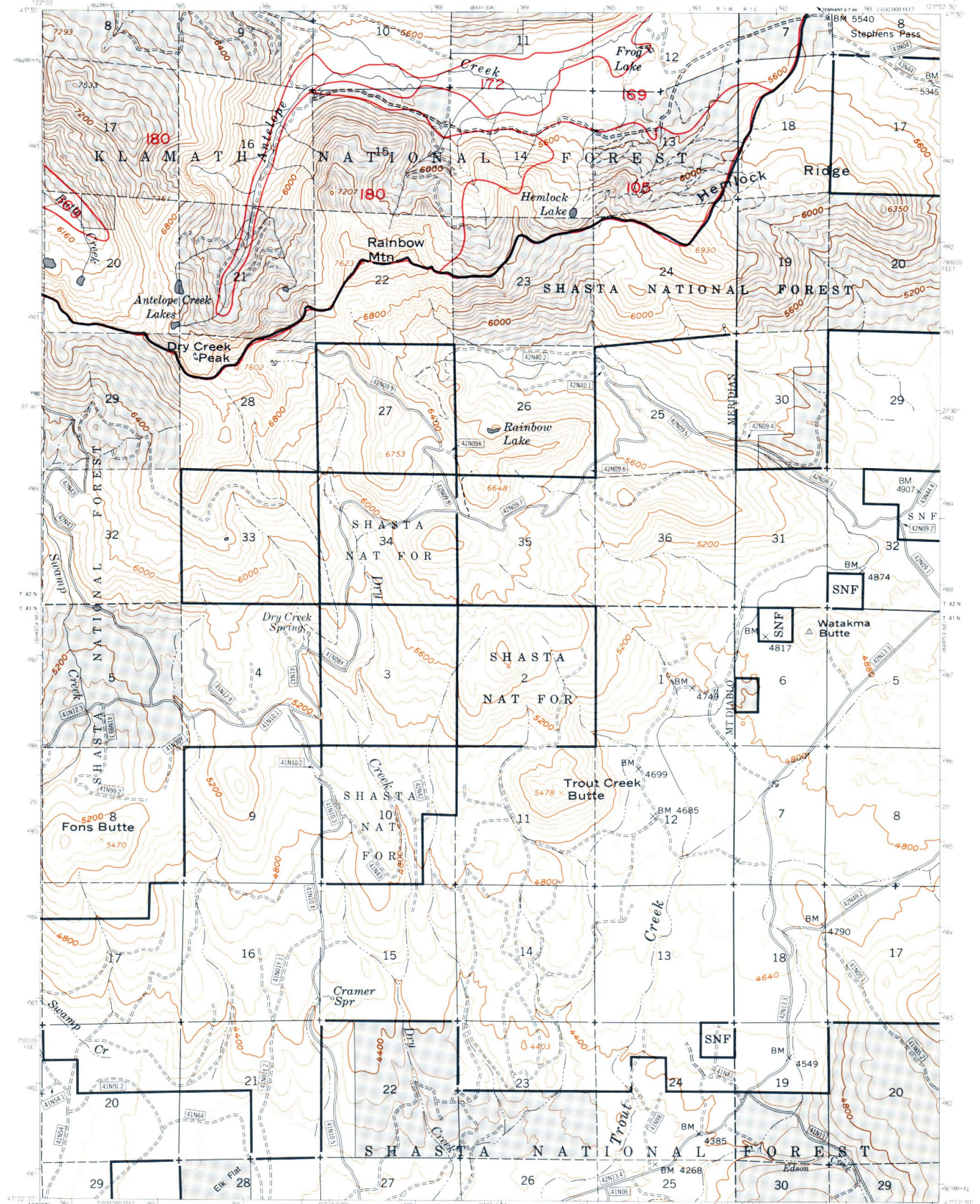
DEES PEAK, CALIF.
SEA SALINITY WITH 15 QUADRANGLE
N4100-W12315/7.5

1983

686-4C

Klamath National Forest
Order 3 Soil Survey
1982

BARTLE NW
7.5 MINUTE SERIES



Base map prepared by the USGS
Polyconic projection, 1927 North American datum,
10,000 foot grid based on California coordinate system,
zone 1.
1,000 meter Universal Transverse Mercator grid, zone 10
Republished by the USFS San Francisco in 1975 by
photogrammetric methods.
INTERMEDIATE EDITION
Modification to USGS base map by Geomatrix Service
Center from 1982. 1:40,000 Forest Service photography and
1980 correction guide furnished by the Pacific Southwest
Region.



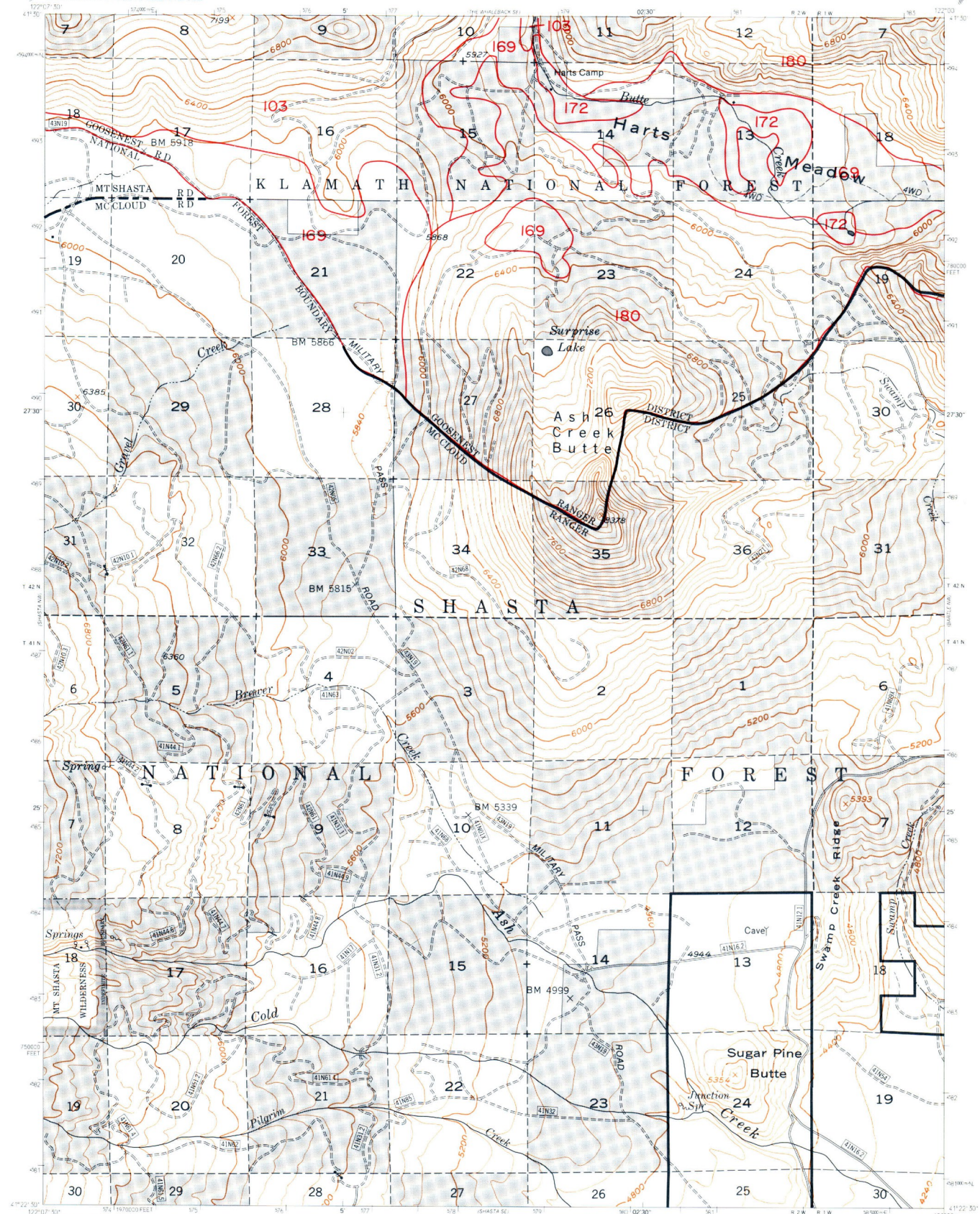
- LEGEND**
- National Forest Boundary
 - Non-Forest Service Land within Proclaimed Boundary as of 1983
 - TOWNSHIP AND SECTION LINE CLASSIFICATION
 - Surveyed Location Reliable
 - Surveyed Location Approximate
 - Unsurveyed, Protection
 - Primary Highway
 - Secondary Highway
 - Improved Light Duty
 - Unimproved Dirt
 - Trail
 - Approximate Road
 - Approximate Trail
 - US Highway
 - State Highway
 - County Road
 - Forest Highway
 - Forest Road
 - Forest Trail



BARTLE NW
7.5 MINUTE SERIES
1983
697-2

Klamath National Forest
Order 3 Soil Survey
1982

SHASTA NE
7.5 MINUTE SERIES







Klamath National Forest
Order 3 Soil Survey
1982



CHINA MTN NE
7.5 MINUTE SERIES

[illegible]

 National Forest Boundary
 Non-Forest Service Land within Proclaimed Boundary as of 1993
TOWNSHIP AND SECTION LINE CLASSIFICATION
 Surveyed Location Reliable
 Surveyed Location Approximate
 Unsurveyed, Protection

 Primary Highway
 Secondary Highway
 Improved Light Duty
 Unimproved Dirt
 Trail
 Approximate Road
 Approximate Trail

	US Highway
	State Highway
	County Road
	Forest Highway
	Forest Road
	Forest Trail

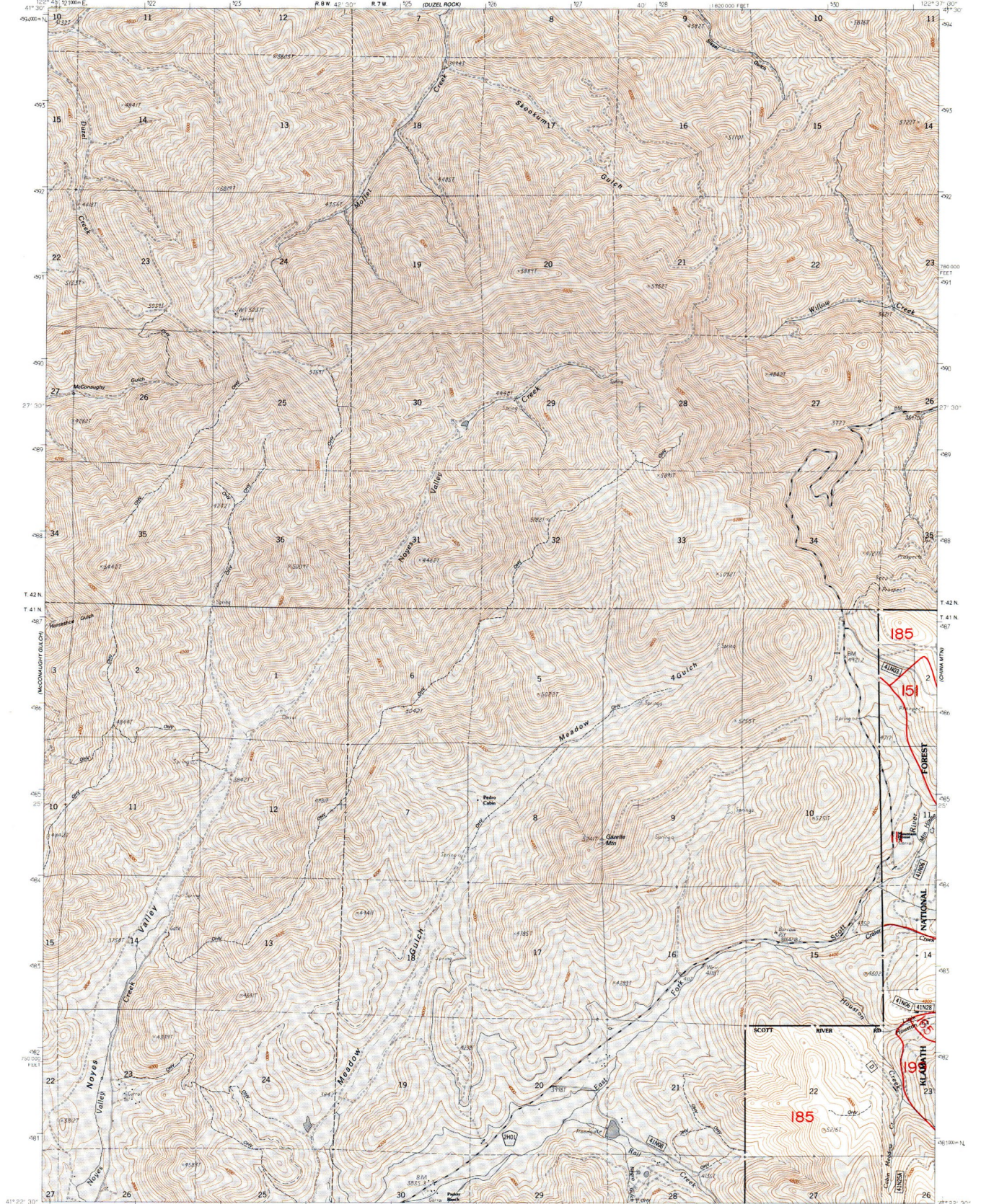
700-1C

SHASTA - TRINITY
NATIONAL FOREST

Klamath National Forest Order 3 Soil Survey 1982

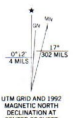
GAZELLE MTN. QUADRANGLE
CALIFORNIA - SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY USGS, NOS/NOAA
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN 1982-83
FIELD CHECKED 1983, MAP EDITED 1983
PROJECTION LAMBERT CONFORMAL CONIC
GRID 100-METER UNIVERSAL TRANSVERSE MERCATOR ZONE 10
HORN-FOOT STATE GRID TOWNSHIP 36 NORTH, RANGE 12 WEST, CALIFORNIA ZONE 1

VERTICAL DATUM - NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM - 1983 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
(19 meters north / 94 meters east)
Modification to the USGS provisional base map by the
Geomatics Service Center from 1980 aerial
photography and 1990 correction guides furnished by
the Pacific Southwest Region
Landset revised according to additional Forest Service evidence



- TOWNSHIP AND SECTION LINE CLASSIFICATION**
- Surveyed, Location Reliable
 - Surveyed, Location Approximate
 - Surveyed, Location Questionable
 - Unsurveyed
 - Locked Gate

- CONTOUR INTERVAL 40 FEET**
- Primary Highway
 - Secondary Highway
 - Improved Road, Paved
 - Improved Road, Gravel
 - Unimproved Road, Native Surface (includes BRD not maintained for passenger cars)
 - Unimproved Road
 - Trail

- ROUTE MARKERS**
- N Interstate
 - U.S.
 - State
 - County
 - National Forest, Well Maintained for Passenger Cars
 - National Forest, Maintained for Passenger Cars
 - National Forest, Not Maintained for Passenger Cars
 - National Forest Trail

718.4	717.3	717.4
701.1	700.2	700.1
701.4	700.3	700.4

GAZELLE MTN., CALIF.
PROVISIONAL EDITION 1986
N4122.5-W12237.5/7.5
700-2
REVISED 1992

ATTN: Road ticks indicate change between portions
photo-identified and portions not visible on the aerial photography.
Portions not visible will be labeled LOCATION APPROXIMATE.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

SCOTT MOUNTAIN QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC) (CHINA MTN)



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY: 1963, 1962, 1960, 1958, NOS-NOIA
DERIVED FROM AERIAL PHOTOGRAPHS TAKEN: 1960 AND 1963
PROJECTION: LAMBERT CONFORMAL CONIC
GRID: 1983 UNIVERSAL TRANSVERSE MERCATOR ZONE 10
100,000 FOOT STATE GRID TICS: CALIFORNIA ZONE 1

VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM: 1927 NORTH AMERICAN DATUM
To place this map in the North American Datum of 1983,
move the projection lines as shown at dashed corner ticks
(19 meters north / 94 meters east)
Modification to the USGS provisional base map by the
Geomatics Service Center from 1989 aerial
photography and 1990 correction figures furnished by
the Pacific Southwest Region

Landnet revised according to additional Forest Service evidence

Legend


— National Forest Boundary
□ Non-National Forest System Land as of 1992

TOWNSHIP AND SECTION LINE CLASSIFICATION

— Surveyed, Location Reliable
- - - Surveyed, Location Approximate
- · - Surveyed, Location Questionable
· · · Unsurveyed
+ + + Locked Gate

 Primary Highway
 Secondary Highway
 Improved Road, Paved
 Improved Road, Gravel
 Unimproved Road, Native Surface (includes 4WD/not maintain passenger cars)
 Unimproved Road

ROUTE MARKERS

	National Forest, Well Maintained for Passenger Cars
	National Forest, Maintained for Passenger Cars
	National Forest, Not Maintained for Passenger Cars
	National Forest Trail

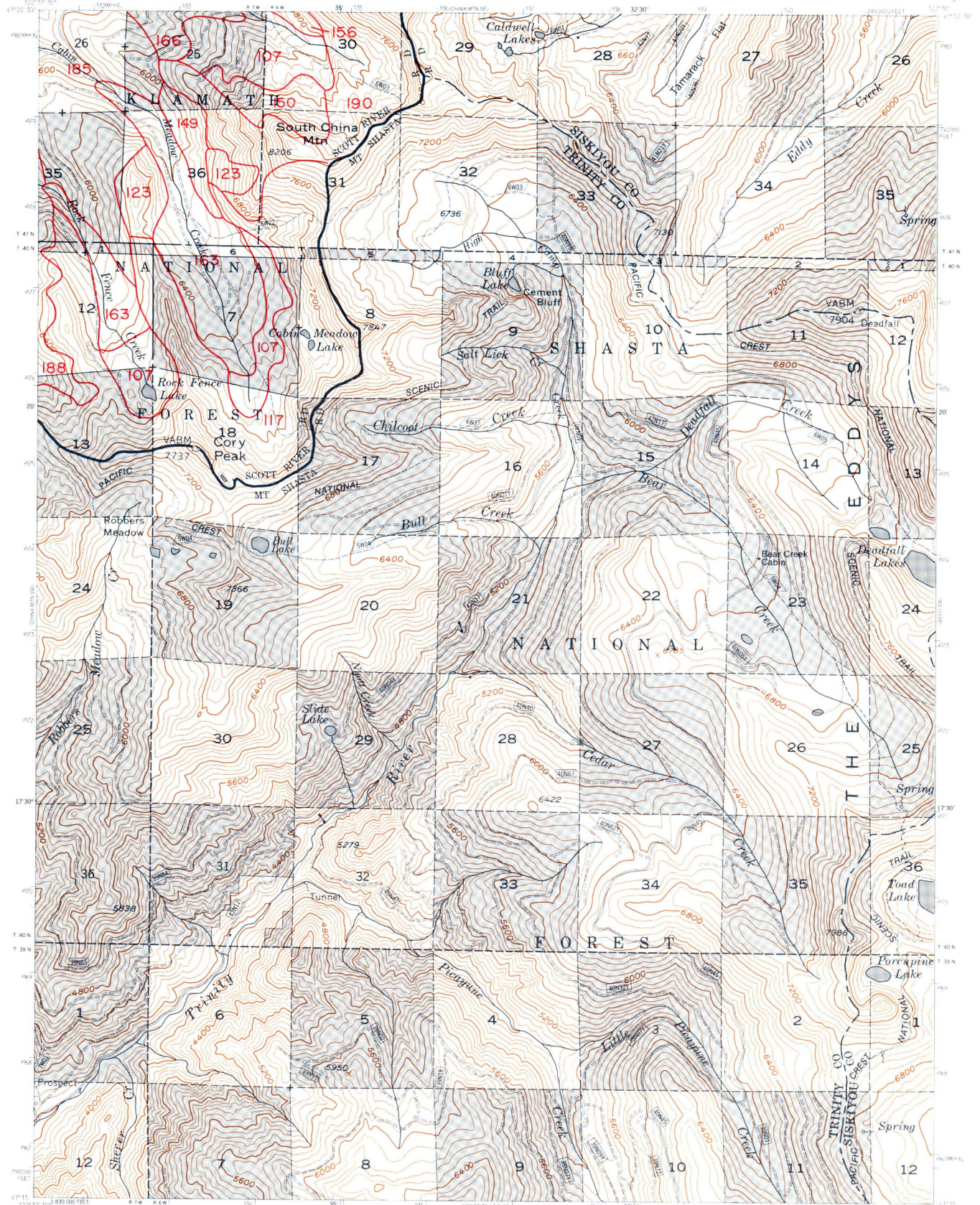
701-1	700-2	700-1
701-4	700-3	700-4
684-1	683-2	683-1

SCOTT MOUNTAIN, CALIF
PROVISIONAL EDITION 1986
N4115W11237.5/7.5
700-3
REVISED 1992

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR FOREST SERVICE USE

CHINA MTN SE
7.5 MINUTE SERIES



Base map prepared by the USGS
Polyconic projection, 1927 North American datum,
10,000-foot grid based on California coordinate system,
zone 1
1000-meter Universal Transverse Mercator grid, zone 10

INTERMEDIATE EDITION

Modification to USGS base map by Geomatrix Service
Center from 1982 1:40,000 Forest Service photography and
1982 correction guides furnished by the Pacific Southwest
Region

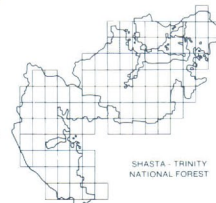


National Forest Boundary
Non-Forest Service Land within
Proclaimed Boundary as of 1983
TOWNSHIP AND SECTION LINE CLASSIFICATION
Surveyed Location Reliable
Surveyed Location Approximate
Unsurveyed Protraction

CONTOUR INTERVAL 80 FEET
DATUM IS MEAN SEA LEVEL

LEGEND
Primary Highway
Secondary Highway
Improved Light Duty
Unimproved Dirt
Trail
Approximate Road
Approximate Trail

US Highway
State Highway
County Road
Forest Highway
Forest Road
Forest Trail



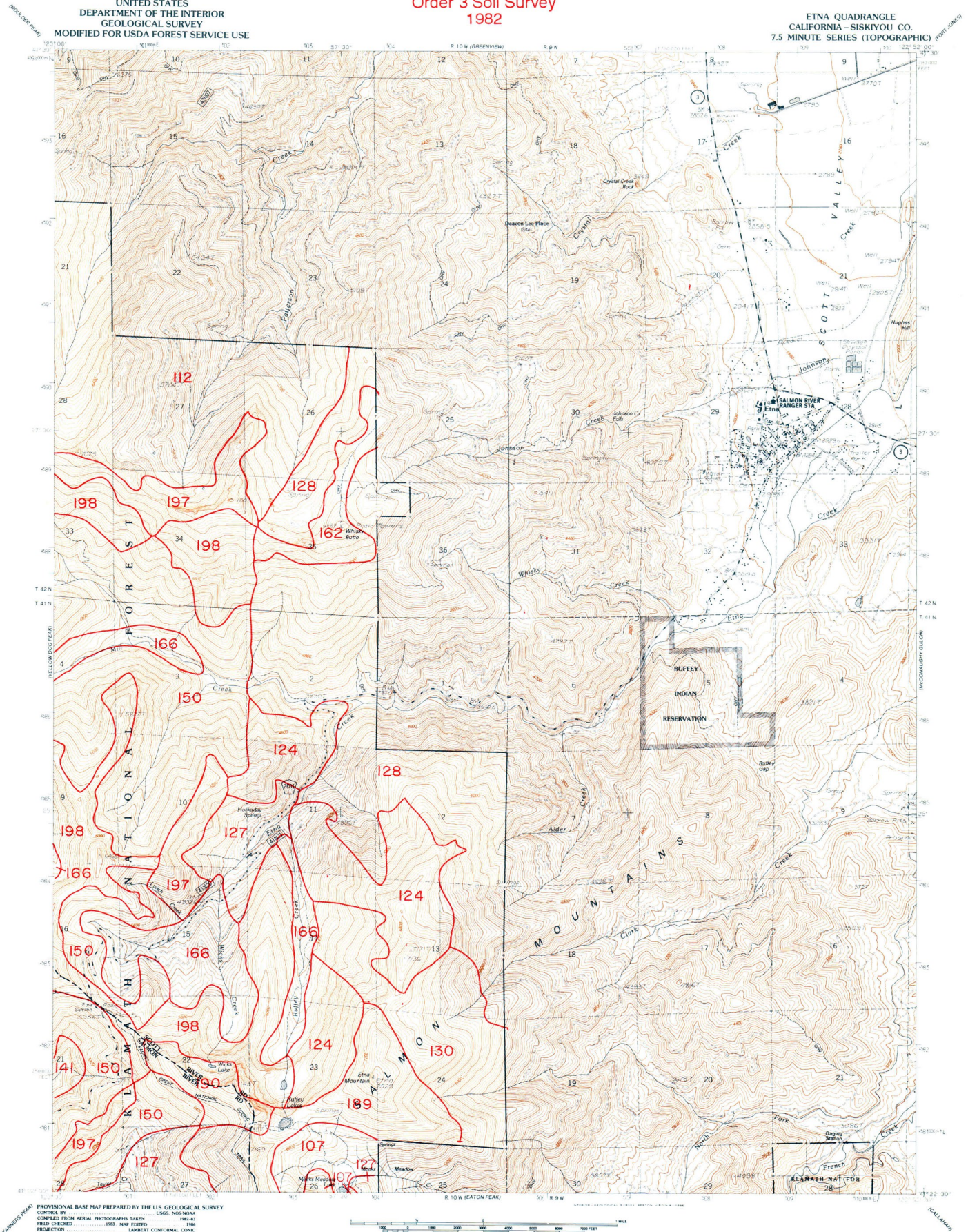
CHINA MTN SE
N4107 5-R12200 7.5
1983

700-4C

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

ETNA QUADRANGLE
CALIFORNIA - SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC) (FORT 2000)



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY U.S.G.S. MONITORING
CORRECTIONS FROM AERIAL PHOTOGRAPHS TAKEN 1960-62
FIELD CHECKED 1983 MAP EDITED 1986
PROJECTION UTM 10METER UNIVERSAL TRANSVERSE MERCATOR ZONE 10
GRID 100METER STATE GRID TICS
CALIFORNIA ZONE 1

VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM: 1983 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
(19 meters north 95 meters east).
Modification to the USGS provisional base map by the
Geomatics Service Center from 1989 aerial
photography and 1990 correction guides furnished by
the Pacific Southwest Region
Landset revised according to additional Forest Service evidence

UTM GRID AND 1982
MAGNETIC NORTH
CENTER OF SHEET

TOWNSHIP AND SECTION LINE CLASSIFICATION
Surveyed, Location Reliable
Surveyed, Location Approximate
Surveyed, Location Questionable
Unsurveyed
Locked Gate

CONTOUR INTERVAL 40 FEET
SUPPLEMENTARY CONTOUR INTERVAL 20 FEET
Primary Highway
Secondary Highway
Improved Road, Paved
Improved Road, Gravel
Unimproved Road, Native Surface
(includes 4WD not maintained for
passenger cars)
Unimproved Road
Trail

ROUTE MARKERS

Interstate
U.S.
State
County
National Forest, Well Maintained
for Passenger Cars
National Forest, Maintained
for Passenger Cars
National Forest, Not Maintained
for Passenger Cars
National Forest Trail

718.4	718.3	718.4
702.1	702.2	701.1
702.4	701.3	701.4

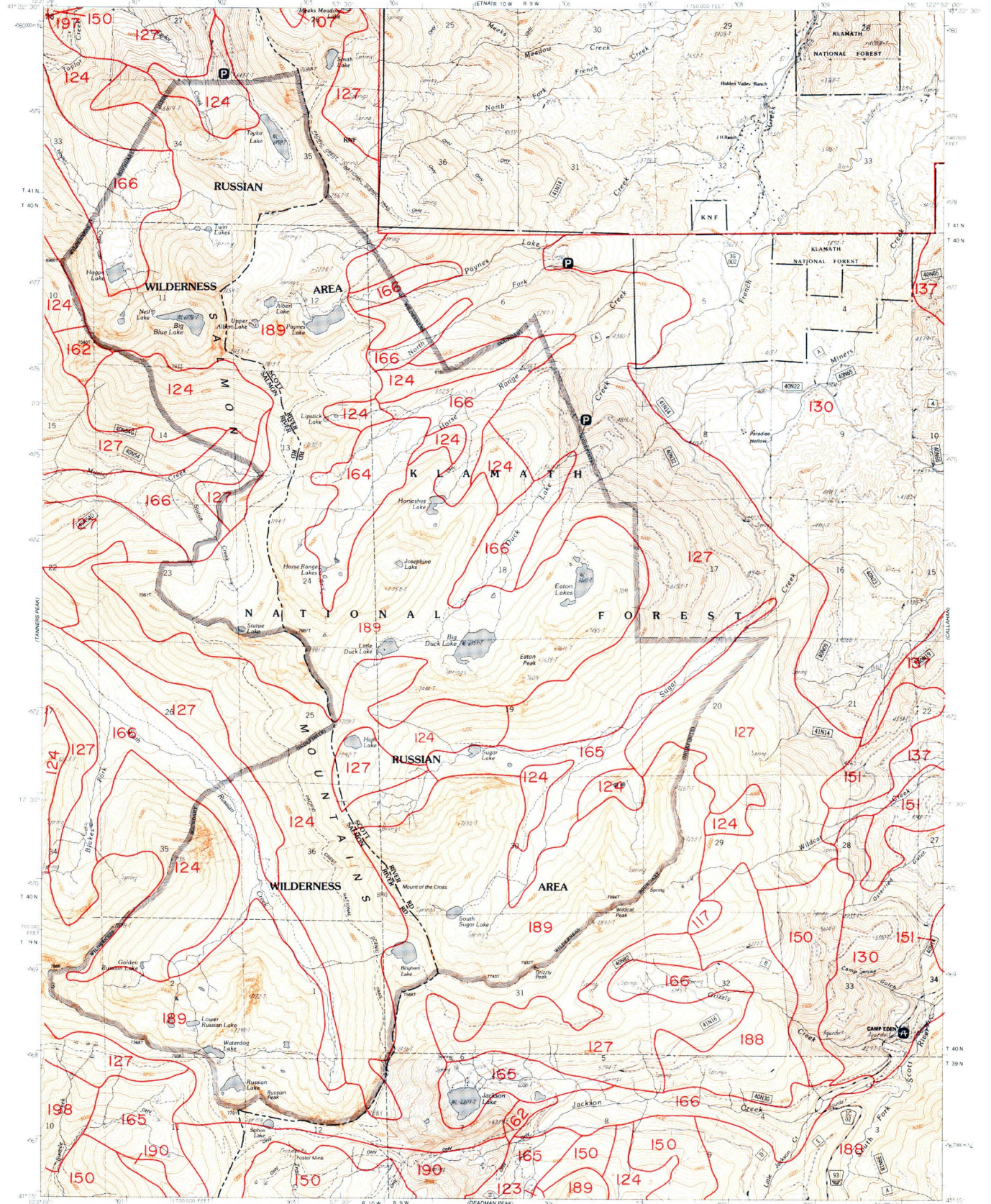
ATTN: Road ticks indicate change between portions
photo-identified and portions not visible on the aerial photography
Portions not visible will be labeled LOCATION APPROXIMATE

ETNA, CALIF.
PROVISIONAL EDITION 1986
N4122.5-W1225.2/5
701-2
REVISED 1992

Klamath National Forest
Order 3 Soil Survey
1982

EATON PEAK QUADRANGLE
CALIFORNIA - SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY U.S.G.S. MONITORING
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN 1980 AND 1982
FIELD CHECKED 1983. MAP EDITED 1986
PROJECTION: UTM GRID AND 1983 MONITORING NORTH
GRID: 300-METER UNIVERSAL TRANSVERSE MERCATOR ZONE 10
18-DEGREE STATE GRID TICKS

VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM: 1983 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
(19 meters north - 95 meters east).
Modification to the USGS provisional base map by the
Geomatics Service Center from 1989 aerial
photography and 1990 correction guides furnished by
the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



TOWNSHIP AND SECTION LINE CLASSIFICATION

- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Surveyed, Location Questionable
- Unsurveyed
- Locked Gate

ROAD CLASSIFICATION

- National Forest Boundary
- Non-National Forest System Land
- Primary Highway
- Secondary Highway
- Improved Road, Paved
- Improved Road, Gravel
- Unimproved Road, Native Surface (includes 4WD/road not maintained for passenger cars)
- Unimproved Road
- Trail

ROUTE MARKERS

- National Forest, Well Maintained for Passenger Cars
- National Forest, Maintained for Passenger Cars
- National Forest, Not Maintained for Passenger Cars
- National Forest Trail

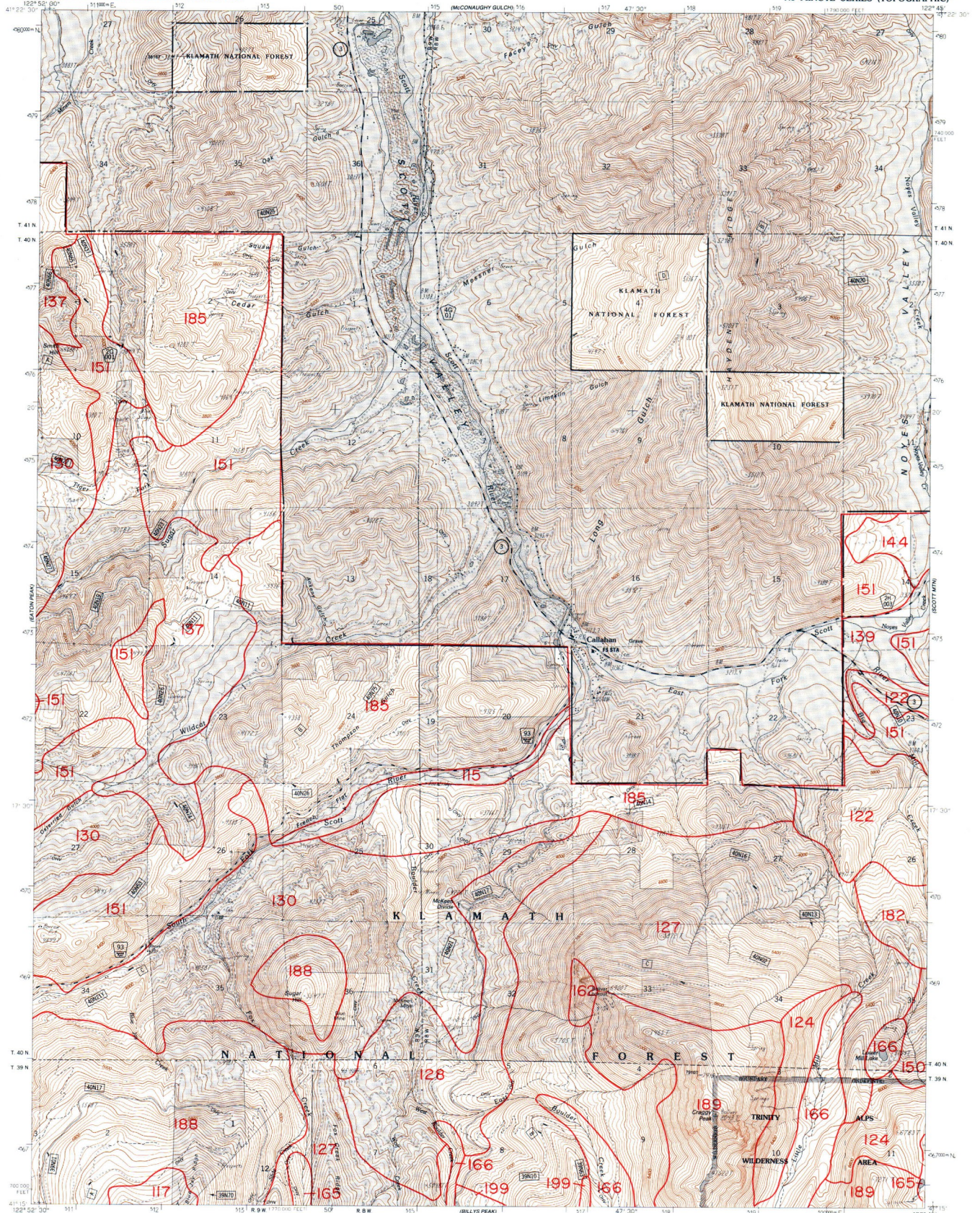
702.1	701.2	701.1
702.4	701.3	701.4
695.1	694.2	694.1

EATON PEAK, CALIF.
PROVISIONAL EDITION 1986
N4115W12252.5/7.5
701-3
REVISED 1992

Klamath National Forest Order 3 Soil Survey 1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

CALLAHAN QUADRANGLE
CALIFORNIA - SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY U.S.G.S. NORANDA
CORRECTED FROM AERIAL PHOTOGRAPHS TAKEN 1980 AND 1983
FIELD CHECKED 1983 MAP EDITED 1986
PROJECTION LAMBERT CONFORMAL CONIC
GRID 100-METER UNIVERSAL TRANSVERSE MERCATOR ZONE 10
HUMBOLDT STATE GRID TICS CALIFORNIA ZONE 1

VERTICAL DATUM NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM 1983 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
(19 meters north / 94 meters east)
Modification to the USGS provisional base map by the
Geomatics Service Center from 1989 aerial
photography and 1990 correction guides furnished by
the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence

UTM GRID AND 1983
MAGNETIC NORTH
SECTION 41
CENTER OF SHEET

TOWNSHIP AND SECTION LINE CLASSIFICATION
Surveyed, Location Reliable
Surveyed, Location Approximate
Unsurveyed
Locked Gate

CONTOUR INTERVAL 40 FEET
Primary Highway
Secondary Highway
Improved Road, Paved
Improved Road, Gravel
Unimproved Road, Native Surface
(includes 4WD not maintained for
passenger cars)
Unimproved Road
Trail

ATTN: Road ticks indicate change between portions
photo identified and portions not visible on the aerial photography
Portions not visible will be labeled LOCATION APPROXIMATE

ROUTE MARKERS
National Forest, Well Maintained
for Passenger Cars
National Forest, Maintained
for Passenger Cars
National Forest, Not Maintained
for Passenger Cars
National Forest Trail

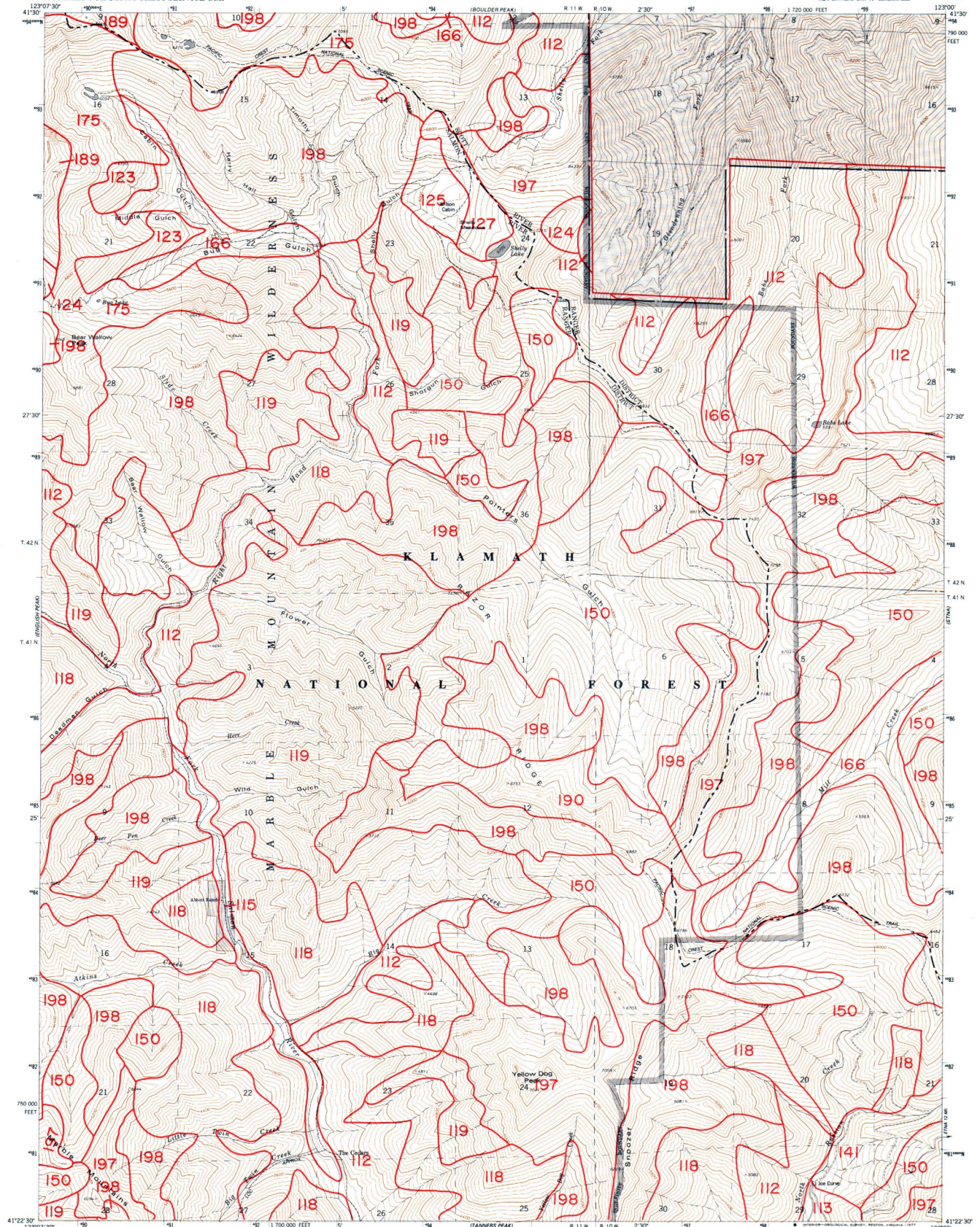
701.2	701.1	700.2
701.3	701.4	700.3
684.2	684.1	683.2

CALLAHAN, CALIF.
PROVISIONAL EDITION 1986
N415W1224S/7.5
701.4
REVISED 1992

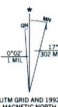
Klamath National Forest
Order 3 Soil Survey
1982

YELLOW DOG PEAK QUADRANGLE
CALIFORNIA-SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
NEW SAWYERS BAR 10' QUADRANGLE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1972-73. Field checked 1974
Projection and 10,000-foot grid ticks. California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American datum
Certain land lines are omitted because of insufficient data
Modification to the USGS base map by the Geomorphology
Service Center from 1989 aerial photography and 1990
correction guides furnished by the Pacific Southwest Region
Landmark revised according to additional Forest Service evidence



- TOWNSHIP AND SECTION LINE CLASSIFICATION**
- Surveyed, Location Reliable
 - Surveyed, Location Approximate
 - Surveyed, Location Questionable
 - Unsurveyed
 - Locked Gate

- CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929**
- Primary Highway
 - Secondary Highway
 - Improved Road, Paved
 - Improved Road, Gravel
 - Unimproved Road, Native Surface (includes 4000 not maintained for passenger cars)
 - Unimproved Road
 - Trail

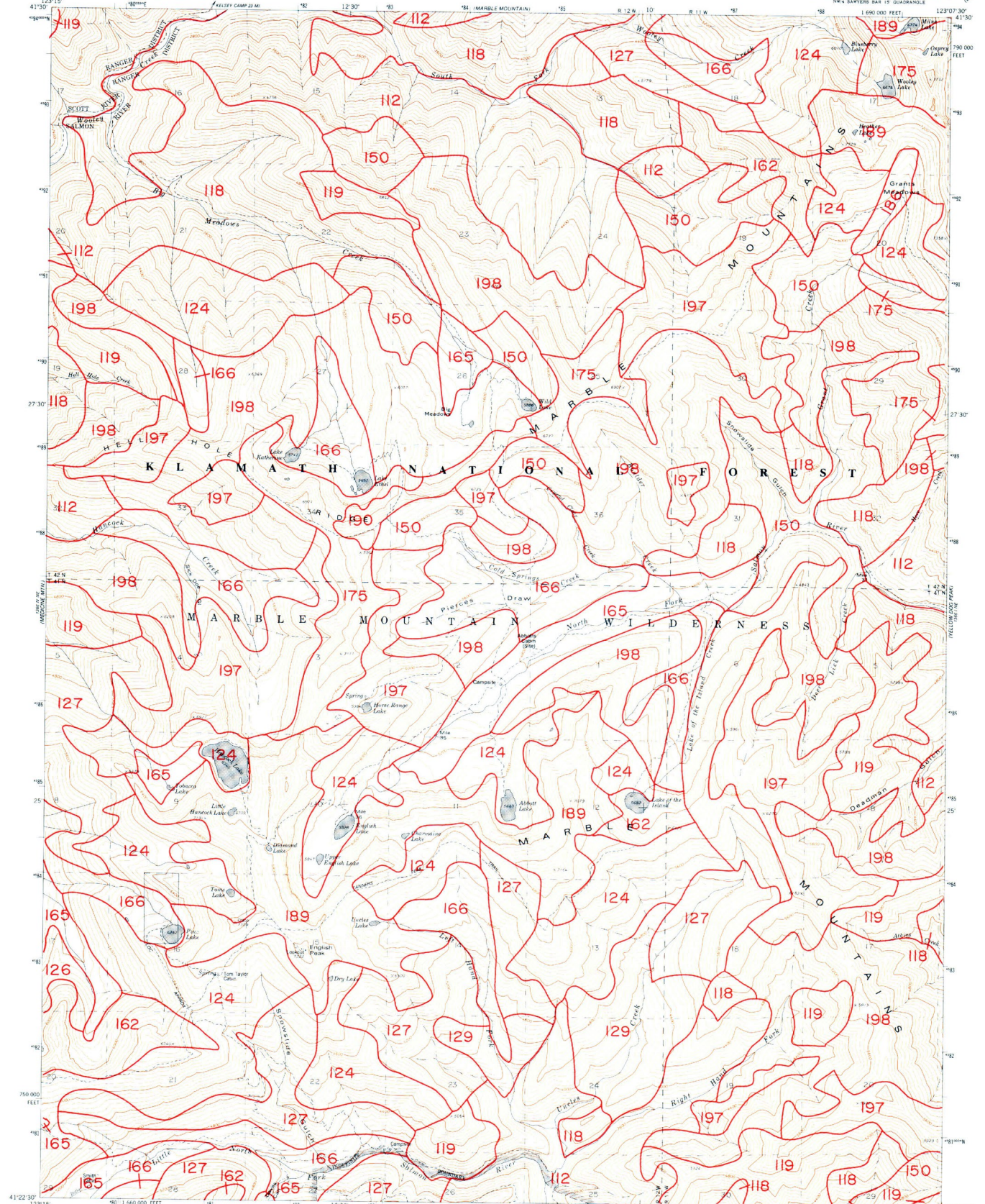
- ROUTE MARKERS**
- National Forest, Well Maintained for Passenger Cars
 - National Forest, Maintained for Passenger Cars
 - National Forest, Not Maintained for Passenger Cars
 - National Forest Trail

719.3	719.4	719.5
702.2	702.1	702.0
702.3	702.4	702.5

YELLOW DOG PEAK, CALIF.
NEW SAWYERS BAR 10' QUADRANGLE
N4122.5-W123007.5
1977
DMA 1396 I NE-SERIES 1985
702-1
REVISED 1992

Klamath National Forest
Order 3 Soil Survey
1982

ENGLISH PEAK QUADRANGLE
CALIFORNIA-SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
NW 4 BARBERS BAR 15 QUADRANGLE



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial
photographs taken 1973. Field checked 1974. Map edited 1977.
Projection and 10,000-foot grid ticks, California coordinate
system, zone 1 (Lambert conformal conic).
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American datum.

Land lines are omitted because of insufficient data.
Modification to the USGS base map by the Geomorphology
Service Center from 1989 aerial photography and 1990
correction guides furnished by the Pacific Southwest Region.
Landline revised according to additional Forest Service evidence.



- TOWNSHIP AND SECTION LINE CLASSIFICATION**
- Surveyed, Location Reliable
 - Surveyed, Location Approximate
 - Surveyed, Location Questionable
 - Unsurveyed
 - Locked Gate

- CONTOUR INTERVAL 80 FEET**
- National Forest Boundary
 - Non-National Forest System Land as of 1992
 - Primary Highway
 - Secondary Highway
 - Improved Road, Paved
 - Improved Road, Gravel
 - Unimproved Road, Native Surface (includes AWD not maintained for passenger cars)
 - Unimproved Road
 - Trail

- ROUTE MARKERS**
- National Forest, Well Maintained for Passenger Cars
 - National Forest, Maintained for Passenger Cars
 - National Forest, Not Maintained for Passenger Cars
 - National Forest Trail

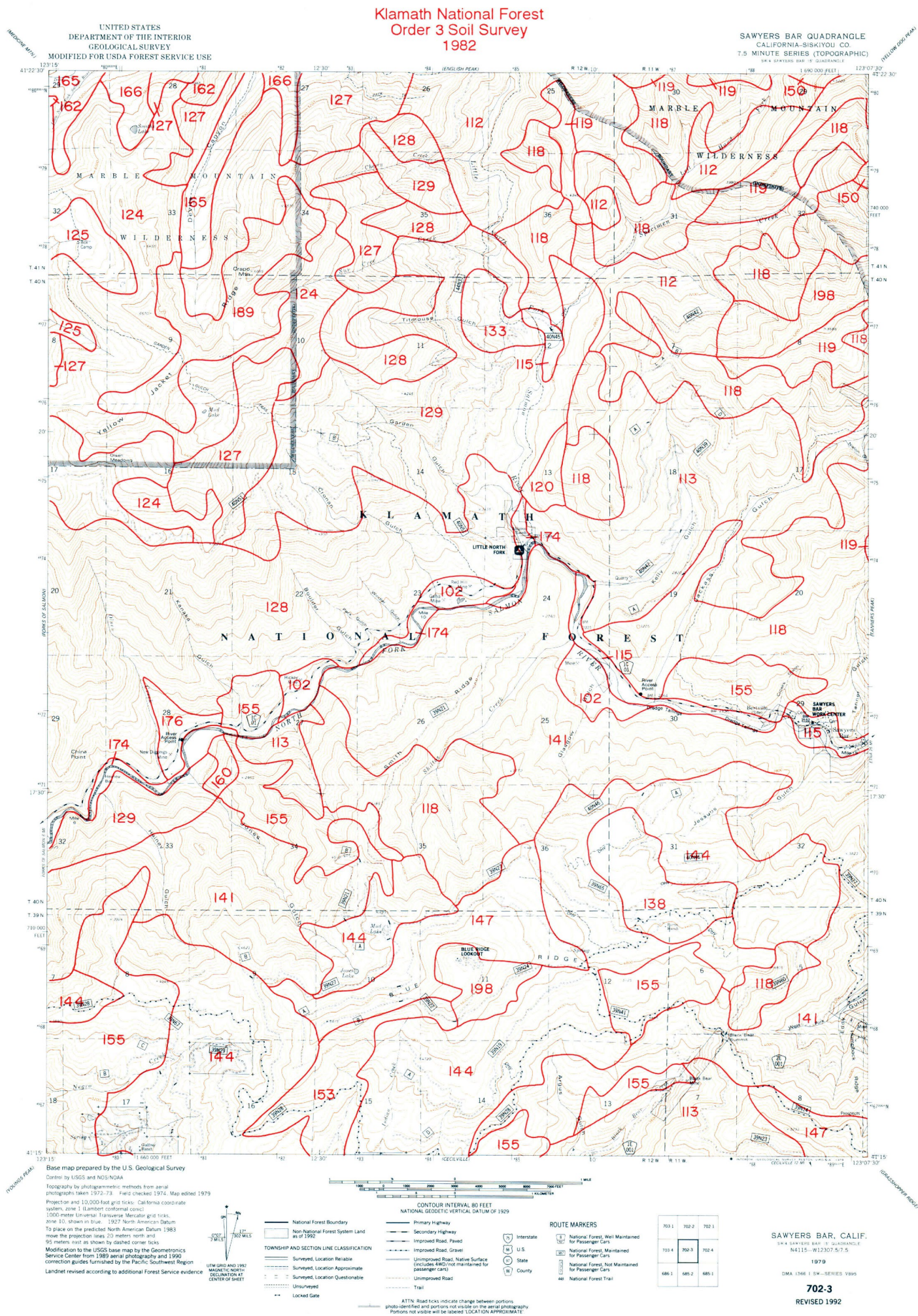
702.0	702.1	702.2
702.3	702.4	702.5

ENGLISH PEAK, CALIF.
NW 4 BARBERS BAR 15 QUADRANGLE
N4122 5-W12307 5/7 5
1977

DMA 1366 1 NW-SERIES 1985

702-2

REVISED 1992



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

This topographic map depicts the Klamath National Forest and surrounding areas. Key features include:

- Marble Mountain Wilderness:** Located in the upper left, characterized by high elevations and rugged terrain.
- Klamath National Forest:** The central area, showing a mix of forested land and open spaces.
- Salmon River:** A major waterway flowing through the center of the map.
- Contour Lines:** Red lines indicating elevation, with major contours labeled every 100 feet (e.g., 1000, 1100, 1200).
- Geographical Labels:** Various locations are marked, including Marble Mountain, Klamath National Forest, Salmon River, and several creeks and gulches.
- Infrastructure:** Roads and trails are shown, with some roads labeled with numbers like 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200.

11

International Forum
on Non-Nationals
of 1992

Secondary
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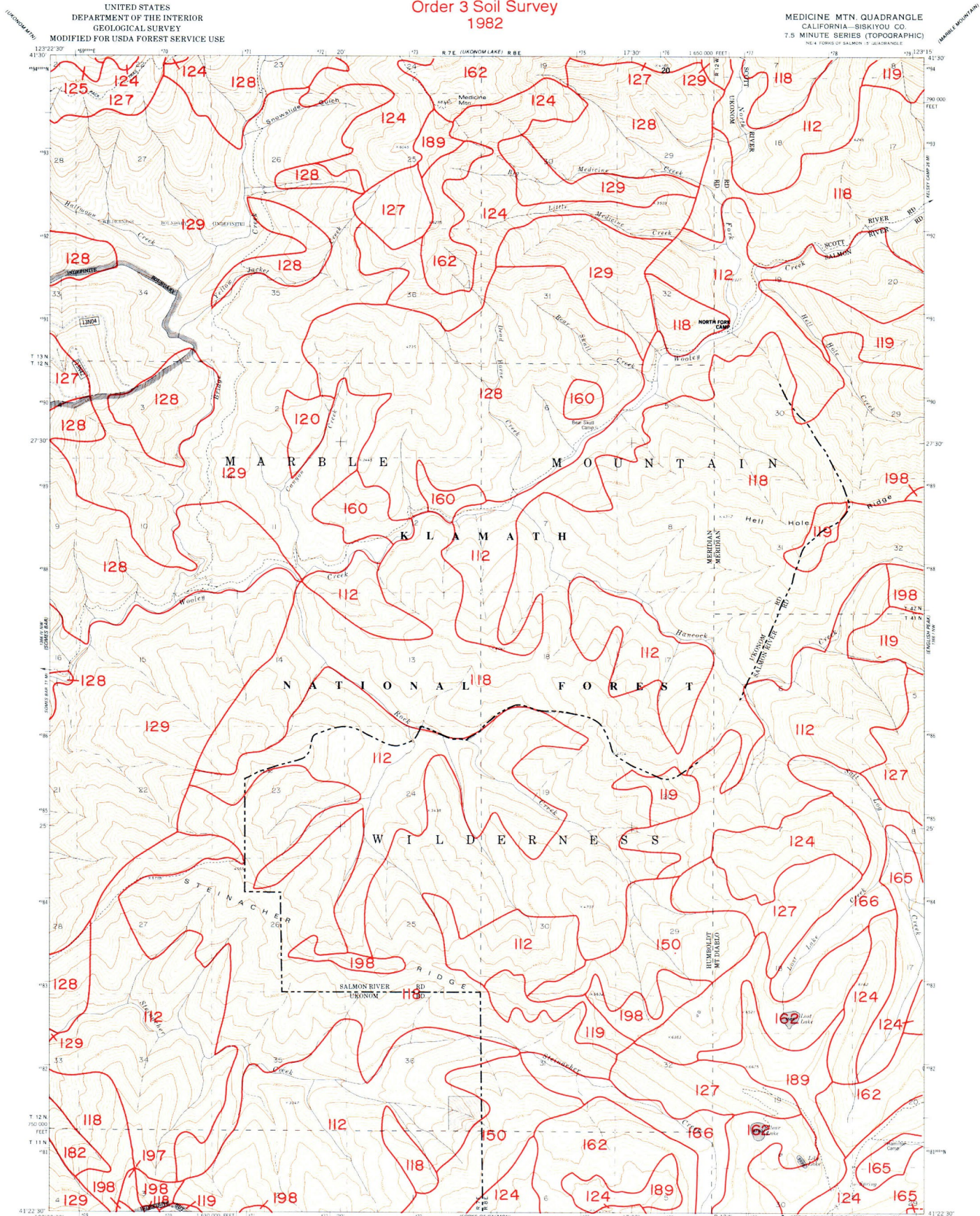
SE/4 SAWYERS BAR 15' QUADRANGLE
N4115—W12300/7.5

1977

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

MEDICINE MTN. QUADRANGLE
CALIFORNIA-SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
NE 4 FORMS OF SALMON R. QUADRANGLE



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NGAA

Topography by photogrammetric methods from aerial
photographs taken 1972-73. Field checked 1974. Map edited 1978
Projection and 10,000 foot grid ticks. California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American datum
Land lines have not been established or are not shown
because of insufficient data.

Modification to the USGS base map by the Geomorphics
Service Center from 1989 aerial photography and 1990
correction guides furnished by the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence.

UTM GRID AND 1982
MAGNETIC NORTH
DECLINATION AT
CENTER OF SHEET

TOWNSHIP AND SECTION LINE CLASSIFICATION

- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Surveyed, Location Questionable
- Unsurveyed
- Locked Gate

**CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929**

- Primary Highway
- Secondary Highway
- Improved Road, Paved
- Improved Road, Gravel
- Unimproved Road, Native Surface (includes 4WD not maintained for passenger cars)
- Unimproved Road
- Trail

ROUTE MARKERS

- National Forest, Well Maintained for Passenger Cars
- National Forest, Maintained for Passenger Cars
- National Forest, Not Maintained for Passenger Cars
- National Forest Trail

703.0	703.1	703.2
703.3	703.4	703.5

MEDICINE MTN., CALIF.
NE 4 FORMS OF SALMON R. QUADRANGLE
N4122.5-W12315.7.5

1978

DMA 1506 IV NE-SERIES, V895

703-1

REVISED 1992

ATTN: Road ticks indicate change between portions
photo-identified and portions not visible on the aerial photography.
Portions not visible will be labeled "LOCATION APPROXIMATE."

Klamath National Forest Order 3 Soil Survey 1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

SOMES BAR QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
NW-4 FORM OF SALMON 15' QUADRANGLE



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial
photographs taken 1972-73. Field checked 1974
Map edited 1979
Projection and 10,000-foot grid ticks: California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American datum
Land lines are omitted because of insufficient data
Modification to the USGS base map by the Geomorphics
Service Center from 1989 aerial photography and 1990
correction guides furnished by the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



TOWNSHIP AND SECTION LINE CLASSIFICATION

- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Surveyed, Location Questionable
- Unsurveyed
- Locked Gate

**CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929**

- Primary Highway
- Secondary Highway
- Improved Road, Paved
- Improved Road, Gravel
- Unimproved Road, Native Surface (includes 4WD/not maintained for passenger cars)
- Unimproved Road
- Trail

ROUTE MARKERS

- National Forest, Well Maintained for Passenger Cars
- National Forest, Maintained for Passenger Cars
- National Forest, Not Maintained for Passenger Cars
- National Forest Trail

721.4	720.3	720.4
704.1	703.2	703.1
704.4	703.3	703.4

SOMES BAR, CALIF.
NW-4 FORM OF SALMON 15' QUADRANGLE
N4122.5-W1232.5/7.5
1979
DMA 1366 IV NW-SERIES V895

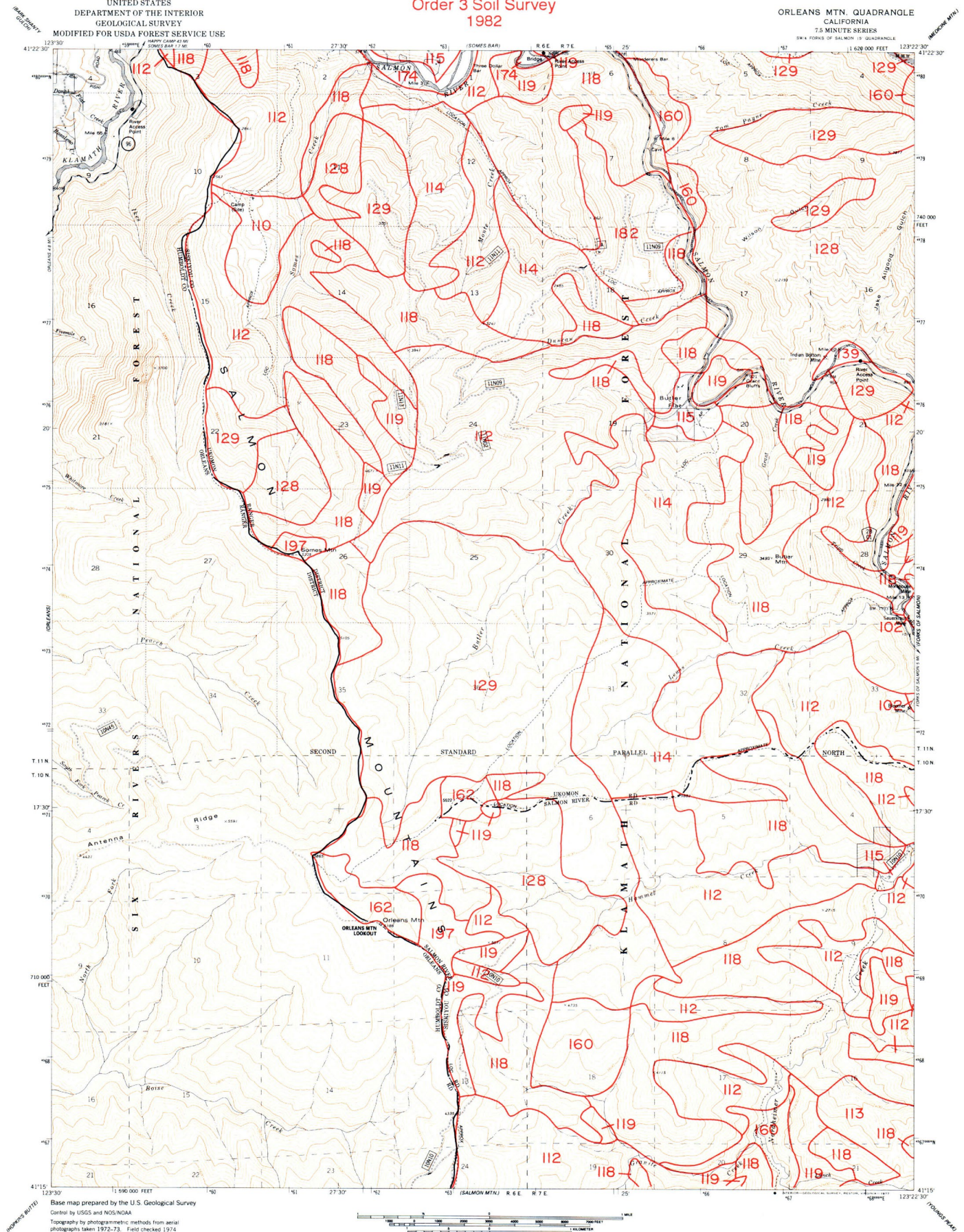
703-2C
REVISED 1992

ATTN: Road ticks indicate change between portions
photo identified and portions not visible on the aerial photography
Portions not visible will be labeled LOCATION APPROXIMATE

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

ORLEANS MTN. QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES
SW 4 FORMS OF SALMON R. QUADRANGLE



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1972-73. Field checked 1974
Projection and 10,000-foot grid ticks. California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid ticks,
zone 10 1927 North American Datum
Modification to the USGS base map by the Geomorphics
Service Center from 1989 aerial photography and 1990
correction guides furnished by the Pacific Southwest Region
Landform revised according to additional Forest Service evidence



- Legend:
- National Forest Boundary
 - Non-National Forest System Land as of 1992
 - TOWNSHIP AND SECTION LINE CLASSIFICATION
 - Surveyed, Location Reliable
 - Surveyed, Location Approximate
 - Surveyed, Location Questionable
 - Unsurveyed
 - Locked Gate

- Legend:
- Primary Highway
 - Secondary Highway
 - Improved Road, Paved
 - Improved Road, Gravel
 - Unimproved Road, Native Surface
 - Unimproved Road, Not Maintained for Passenger Cars
 - Unimproved Road
 - Trail

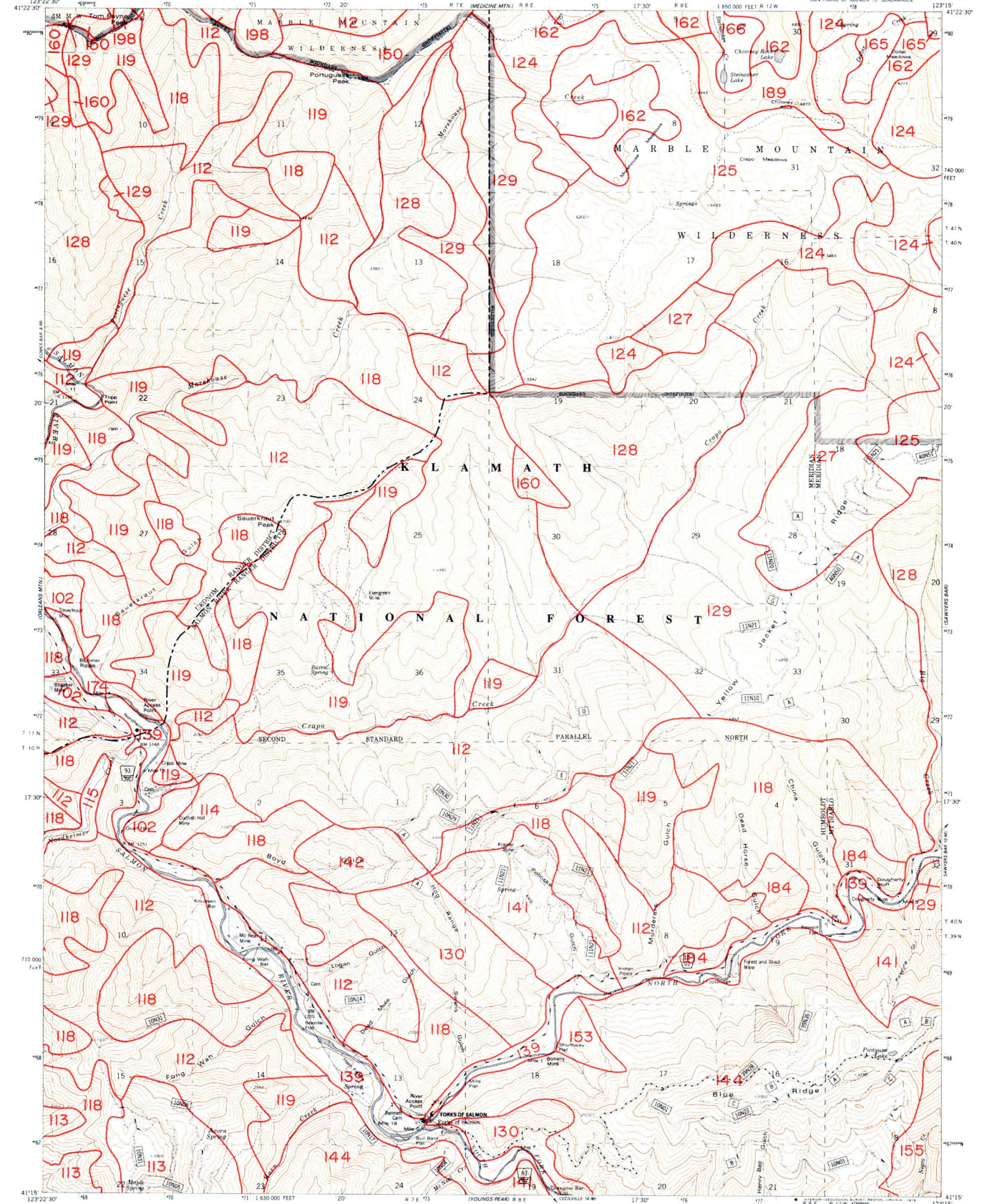
- ROUTE MARKERS
- National Forest, Well Maintained for Passenger Cars
 - National Forest, Maintained for Passenger Cars
 - National Forest, Not Maintained for Passenger Cars
 - National Forest Trail

704.1	703.2	703.1
704.4	703.3	703.4
687.1	686.2	686.1

ORLEANS MTN., CALIF.
SW 4 FORMS OF SALMON R. QUADRANGLE
N4115-W12322 5/7 5
1974
DMA 1368 IV SW-SERIES 1985
703-3
REVISED 1992

ATTN: Road ticks indicate change between portions
photo-identified and portions not visible on the aerial photography
Portions not visible will be labeled 'LOCATION APPROXIMATE'

Klamath National Forest
Order 3 Soil Survey
1982



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial
photographs taken 1972. Field checked 1974. Map edited 1978
Projection and 10,000-foot grid ticks: California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American datum
Modification to the USGS base map by the Geomatrix
Service Center from 1989 aerial photography and 1990
correction guides furnished by the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



UTM GRID AND 1982
MAGNETIC DECLINATION AT
CENTER OF SHEET

TOWNSHIP AND SECTION LINE CLASSIFICATION

- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Surveyed, Location Questionable
- Unsurveyed
- Locked Gate

**CONTOUR INTERVAL 80 FEET
NATIONAL GEODETTIC VERTICAL DATUM OF 1929**

- Primary Highway
- Improved Road, Paved
- Improved Road, Gravel
- Unimproved Road, Native Surface (includes 4WD not maintained for passenger cars)
- Unimproved Road
- Trail

ROUTE MARKERS

- National Forest, Well Maintained for Passenger Cars
- National Forest, Maintained for Passenger Cars
- National Forest, Not Maintained for Passenger Cars
- National Forest Trail

703.2	703.1	703.2
703.3	703.4	703.3
686.2	686.1	686.2

FORKS OF SALMON, CALIF.
SEA FORKS OF SALMON 15 QUADRANGLE
N4115-W12315/7.5

1978

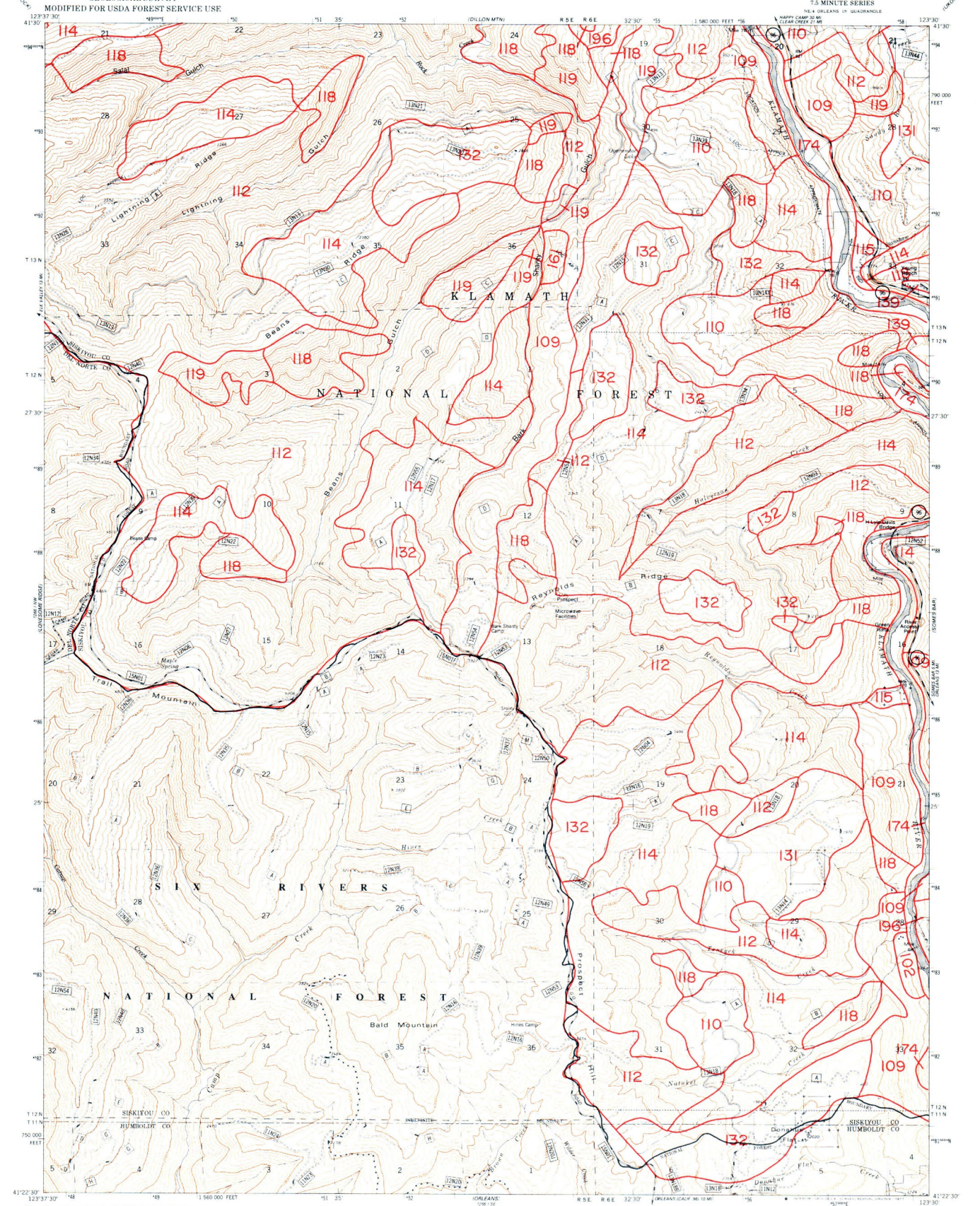
UNA 366 IV SE-SERIES V885

703-4
REVISED 1992

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

BARK SHANTY GULCH QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES
NE 4 OREGON 15 QUADRANGLE
NE 4 OREGON 15 QUADRANGLE
NE 4 OREGON 15 QUADRANGLE



Base map prepared by the U.S. Geological Survey
Control by USGS and NOAA

Topography by photogrammetric methods from aerial
photographs taken 1972-73. Field checked 1974
Projection and 10,000-foot grid ticks. California coordinate
system, zone 11 (Lambert conformal conic)
1000 meter Universal Transverse Mercator grid, zone 10
1927 North American Datum
Modification to the USGS base map by the Geomatics
Service Center from 1989 aerial photography and 1990
contour guides furnished by the Pacific Southwest Region
Landline revised according to additional Forest Service evidence



- TOPOGRAPHY AND SECTION LINE CLASSIFICATION**
- National Forest Boundary
 - - - Non National Forest System Land
 - - - Township and Section Line
 - Surveyed, Location Reliable
 - - - Surveyed, Location Approximate
 - - - Surveyed, Location Questionable
 - - - Unsurveyed
 - - - Locked Gate

- CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929**
- Primary Highway
 - - - Secondary Highway
 - - - Improved Road, Paved
 - - - Improved Road, Gravel
 - - - Unimproved Road, Native Surface
 - - - Unimproved Road, Not Maintained for Passenger Cars
 - - - Unimproved Road
 - - - Trail

- ROUTE MARKERS**
- National Forest, Well Maintained for Passenger Cars
 - National Forest, Maintained for Passenger Cars
 - National Forest, Not Maintained for Passenger Cars
 - National Forest Trail

121.2	121.4	120.3
704.2	704.1	703.2
704.3	704.4	703.1

BARK SHANTY GULCH, CALIF.
NE 4 OREGON 15 QUADRANGLE
N4122 S - R123807.5
1974
DMA 1266 I NE-SERIES 1985
704-1
REVISED 1992

Klamath National Forest Order 3 Soil Survey 1982

LONESOME RIDGE QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
NW 4 OREGON 15' QUADRANGLE



Base map prepared by the U.S. Geological Survey
Control by USGS and NOAA
Topography by photogrammetric methods from aerial
photographs taken 1973. Field checked 1974
Projection and 10,000-foot grid ticks. California coordinate
system, zone 10 (Lambert conformal conic)
1000-metre Universal Transverse Mercator grid ticks,
zone 10, shown in blue. 1927 North American datum
Modification to USGS base map by the USDA Forest Service
Geomatics Service Center from 1988-89 aerial photography and
1990 correction guides furnished by the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



TOPOGRAPHIC AND SECTION LINE CLASSIFICATION

- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Surveyed, Location Questionable
- Unsurveyed, Protection

CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

- Primary Highway
- Secondary Highway
- Improved Road, Paved
- Improved Road, Gravel
- Improved Road, Dirt
- Unimproved Road, Dirt
- Trail
- Locked Gate

ROAD CLASSIFICATION

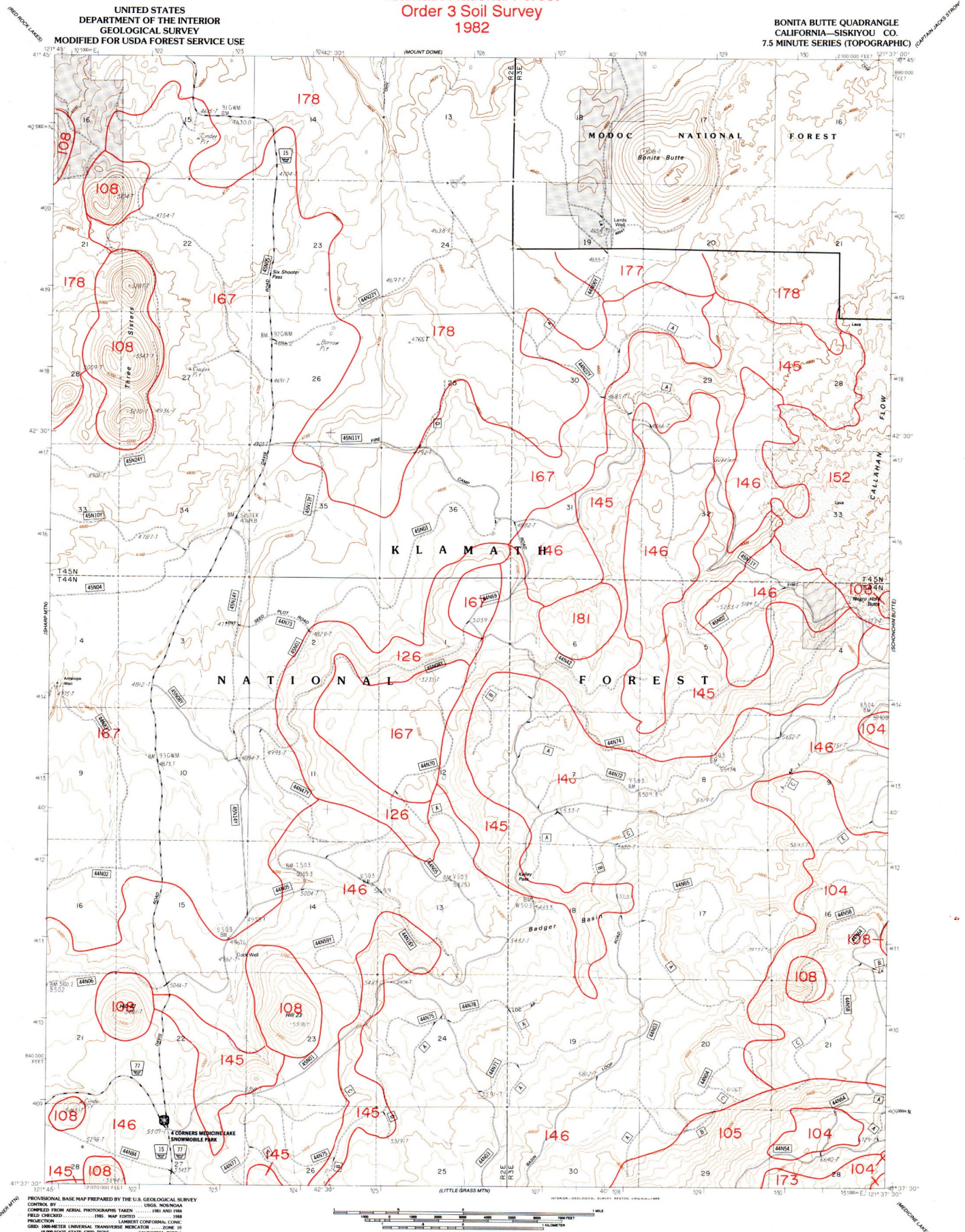
- Interstate Highway
- U.S. Highway
- State Highway
- County Road
- Primary Forest Road
- Forest Road
- Forest Trail

722 4C	721 3C	721 4C
705 1C	704 2C	704 1C
705 3C	704 3C	704 4C

LONESOME RIDGE, CALIF.
NW 4 OREGON 15' QUADRANGLE
NAD 1983 S. W. 12337 5/7.5
1974
DMA 1386-1 NW-SERIES Y885
704-2C

ATTN: Road ticks indicate change between portions
photo identified and portions not visible in the aerial photography
Portions not visible will be labeled 'LOCATION APPROXIMATE'

Klamath National Forest Order 3 Soil Survey 1982



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN 1961 AND 1964
FIELD CHECKED 1982 MAP CORRECTED 1988
PROJECTION LAMBERT CONFORMAL CONIC
GRID DIMENSIONS (NATIONAL TRANSVERSE MERCATOR) 7.5 MINUTE
HORIZONTAL DATUM 1982 NORTH AMERICAN DATUM
VERTICAL DATUM NATIONAL GEODESIC DATUM OF 1983
To place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
(18 meters north / 93 meters east)
Modification to the USGS provisional base map by the
Geomatics Service Center from 1989 aerial
photography and 1999 correction guides furnished by
the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



- TOPOGRAPHIC AND SECTION LINE CLASSIFICATION**
- National Forest Boundary
 - - - Non-National Forest System Land
 - Surveyed, Location Reliable
 - - - Surveyed, Location Approximate
 - Surveyed, Location Questionable
 - - - Unsurveyed
 - Locked Gate

- CONTOUR INTERVAL 40 FEET
SUPPLEMENTARY CONTOUR INTERVAL 10 FEET**
- Primary Highway
 - - - Secondary Highway
 - - - Improved Road, Paved
 - - - Improved Road, Gravel
 - - - Unimproved Road, Native Surface (includes 4WD/Not maintained for passenger cars)
 - - - Unimproved Road
 - - - Trail

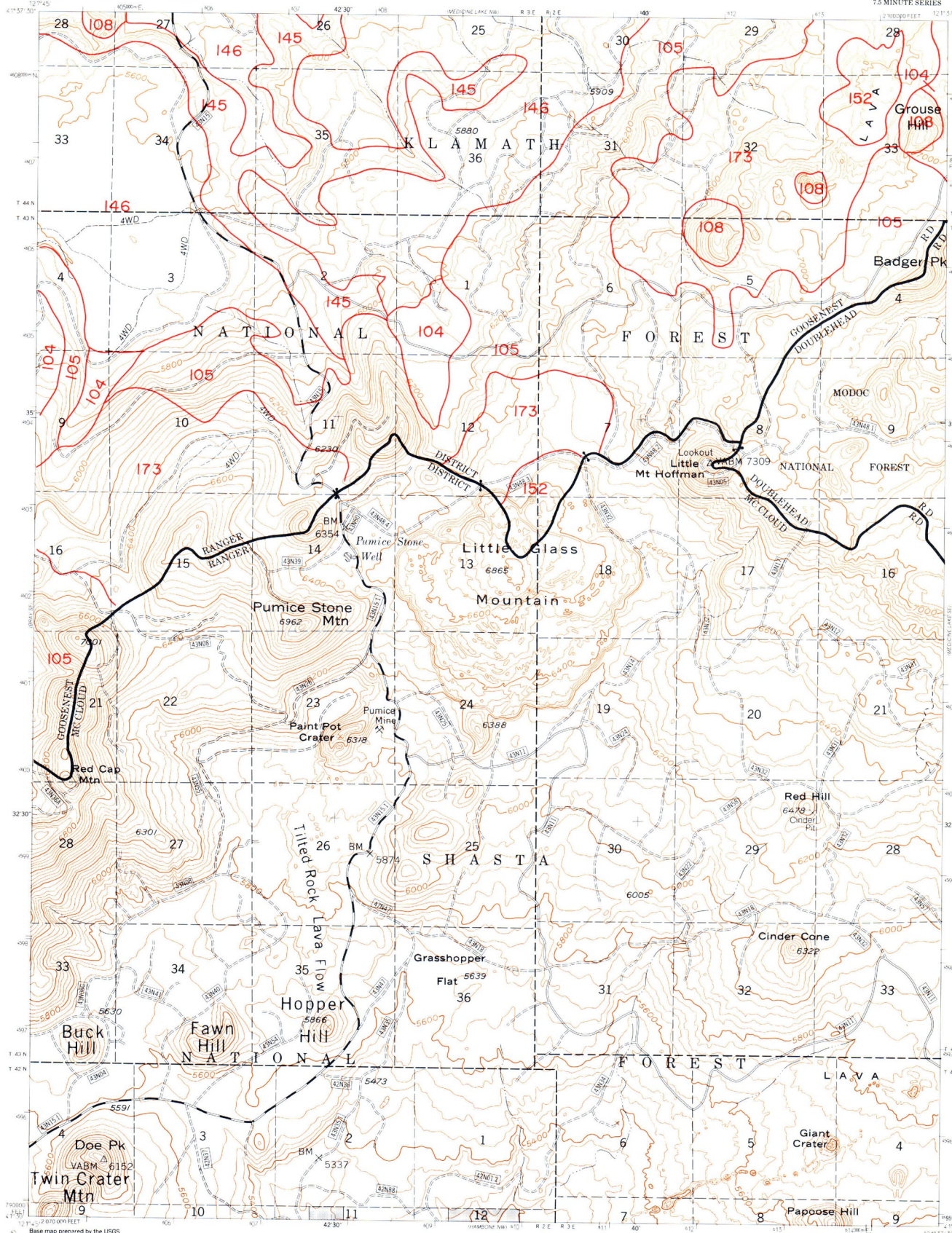
- ROUTE MARKERS**
- National Forest, Well Maintained for Passenger Cars
 - National Forest, Maintained for Passenger Cars
 - National Forest, Not Maintained for Passenger Cars
 - National Forest Trail

731.4	730.9	730.4
731.1	731.2	731.3
731.4	731.3	731.4

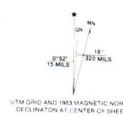
Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR FOREST SERVICE USE

MEDICINE LAKE SW
7.5 MINUTE SERIES



Base map prepared by the USGS
Polyconic projection, 1927 North American datum
10,000 foot grid based on California coordinate system, zone 10
1000 meter Universal Transverse Mercator grid, zone 10
Republished by the USFS San Francisco in 1975 by
photogrammetric methods.
INTERMEDIATE EDITION
Modification to USGS base map by Geomatrix Service
Center from 1982 to 1983: Forest Service orthophotography and
1982 correction guides furnished by the Pacific Southwest
Region



National Forest Boundary
US Forest Service Land within
Proclaimed Boundary as of 1983
TOWNSHIP AND SECTION LINE CLASSIFICATION
Surveyed Location Reliable
Surveyed Location Approximate
Unsurveyed, Protection

LEGEND
Primary Highway
Secondary Highway
Improved Light Duty
Unimproved Dirt
Trail
Approximate Road
Approximate Trail

US Highway
State Highway
County Road
Forest Highway
Forest Road
Forest Trail

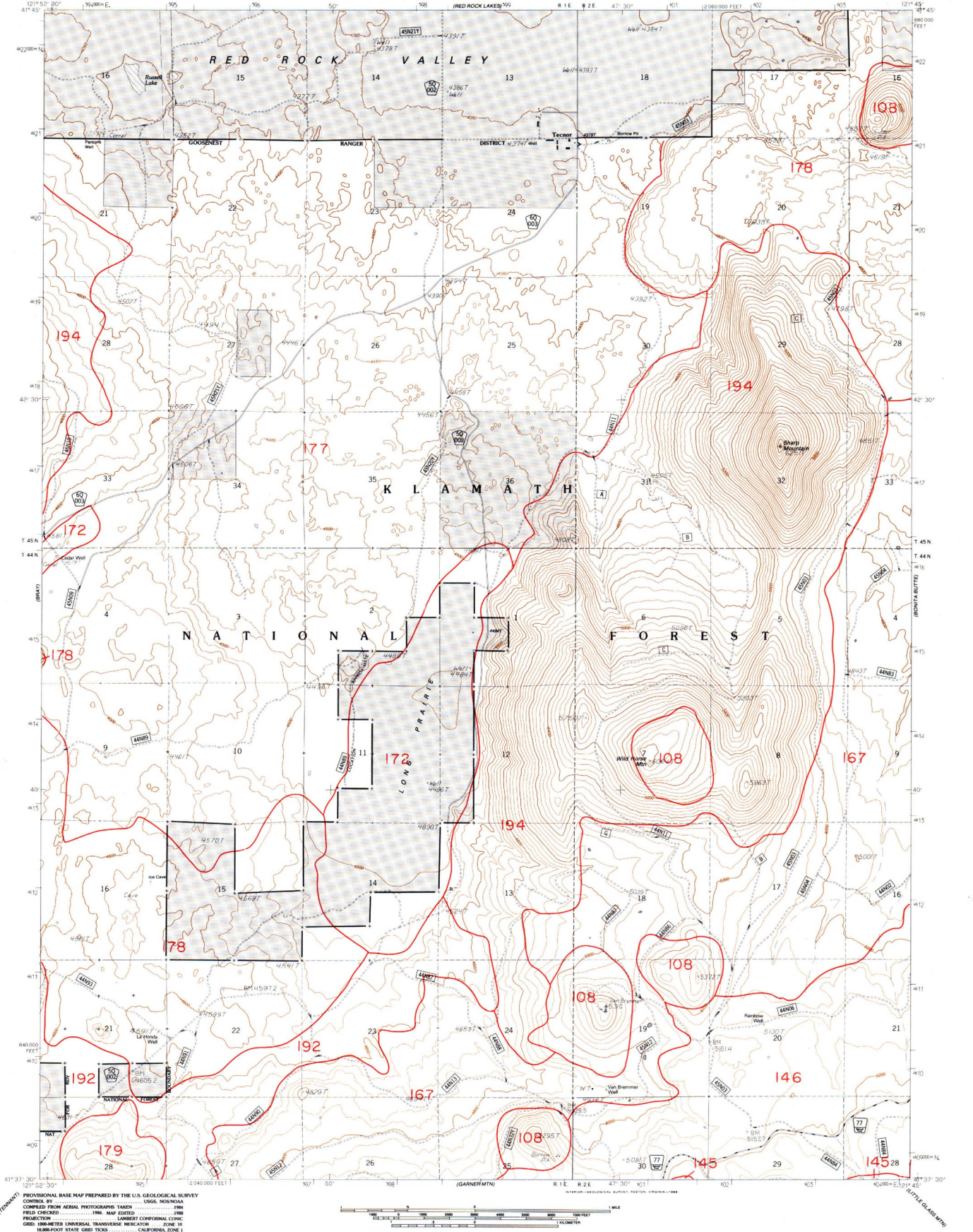


MEDICINE LAKE SW
N4130-W12137 S 7.5
1983
713-3

Klamath National Forest
Order 3 Soil Survey
1982

SHARP MTN. QUADRANGLE
CALIFORNIA-SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY: U.S.G.S. NORAD
TO place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
(1.8 meters north / 53 meters east)
Modification to the USGS provisional base map by the
Geometric Service Center from 1989 aerial
photography and 1990 correction guides furnished by
the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence

VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM OF 1989
HORIZONTAL DATUM: 1983 NORTH AMERICAN DATUM
PROJECTION: UTM (UTM AND 1983 MAGNETIC NORTH CENTER OF SHEET)
TOWNSHIP AND SECTION LINE CLASSIFICATION
Surveyed, Location Reliable
Surveyed, Location Approximate
Surveyed, Location Questionable
Unsurveyed
Locked Gate

CONTOUR INTERVAL 40 FEET
SUPPLEMENTARY CONTOUR INTERVAL 20 FEET
Primary Highway
Secondary Highway
Improved Road, Paved
Improved Road, Gravel
Unimproved Road, Native Surface (includes 400' not maintained for passenger cars)
Unimproved Road
Trail

ROUTE MARKERS
National Forest, Well Maintained for Passenger Cars
National Forest, Maintained for Passenger Cars
National Forest, Not Maintained for Passenger Cars
National Forest Trail

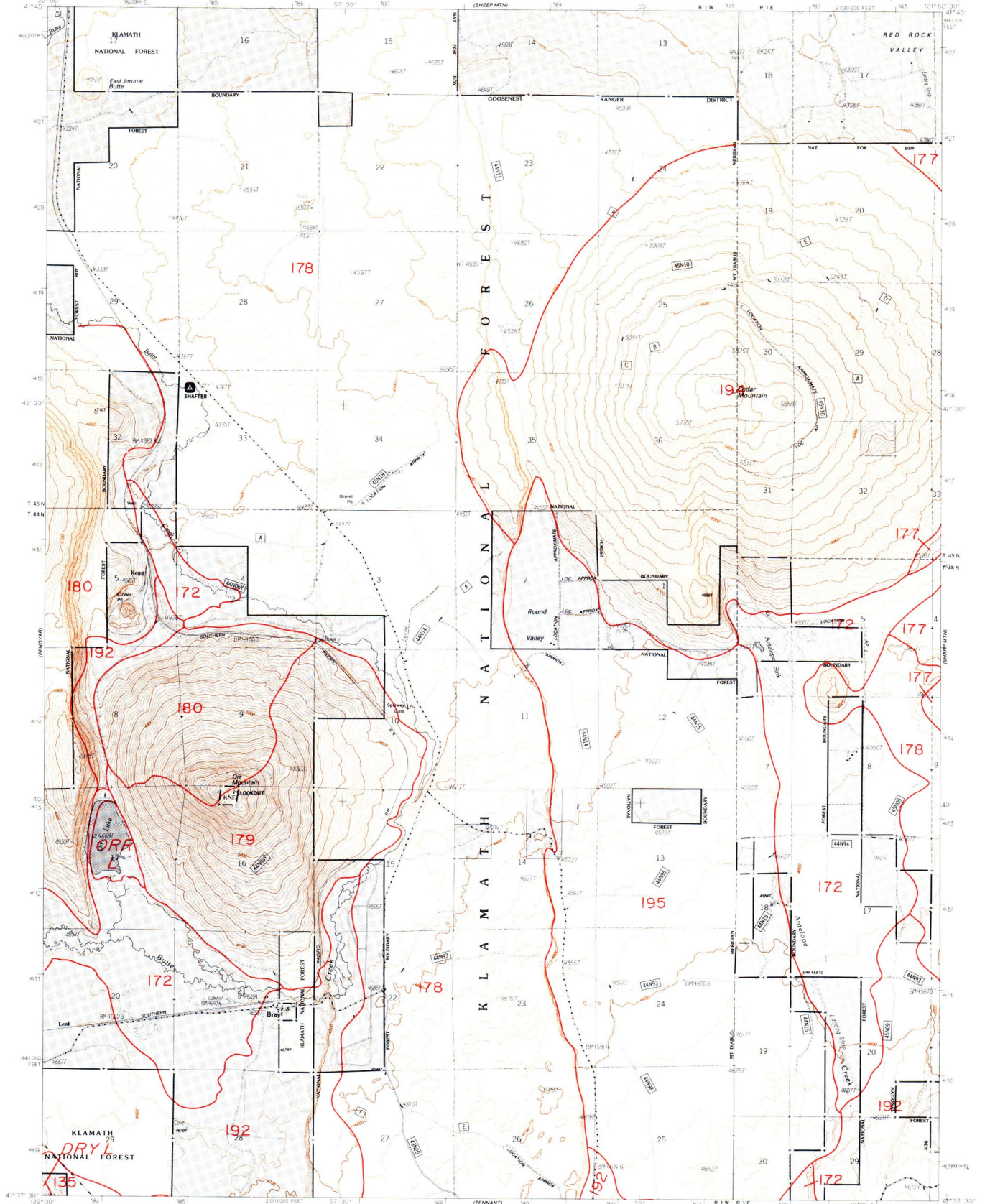
731.3	731.4	730.3
714.0	714.5	713.2
714.3	714.4	713.3

SHARP MTN., CALIF.
PROVISIONAL EDITION 1988
N4137.5-W12145/7.5
714-1
REVISED 1992

Klamath National Forest Order 3 Soil Survey 1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

BRAY QUADRANGLE
CALIFORNIA-SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY COMPILED FROM AERIAL PHOTOGRAPHS TAKEN 1971 NORTH AMERICAN DATUM
FIELD CHECKED 1986 MAP EDITED 1986
PROJECTION 1983 METRIC TRANSVERSE MERCATOR
GRID 100-METER UNIVERSAL TRANSVERSE MERCATOR
GRID 100-METER STATE GRID TICS CALIFORNIA ZONE 1

VERTICAL DATUM NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM 1971 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
(18 meters north - 93 meters east).
Modification to the USGS provisional base map by the
Geometric Service Center from 1989 aerial
photography and 1990 correction guides furnished by
the Pacific Southwest Region
Landmark revised according to additional Forest Service evidence



- TOWNSHIP AND SECTION LINE CLASSIFICATION**
- Surveyed, Location Reliable
 - Surveyed, Location Approximate
 - Surveyed, Location Questionable
 - Unsurveyed
 - Locked Gate

- CONTOUR INTERVAL 20 FEET**
- Primary Highway
 - Secondary Highway
 - Improved Road, Paved
 - Improved Road, Gravel
 - Unimproved Road, Native Surface
 - Unimproved Road, Not Maintained for Passenger Cars
 - Unimproved Road
 - Trail

- ROUTE MARKERS**
- Interstate
 - U.S.
 - State
 - County

- ROUTE MARKERS**
- National Forest, Well Maintained for Passenger Cars
 - National Forest, Maintained for Passenger Cars
 - National Forest, Not Maintained for Passenger Cars
 - National Forest Trail

732.4	731.3	731.4
715.1	714.2	714.1
715.4	714.3	714.4

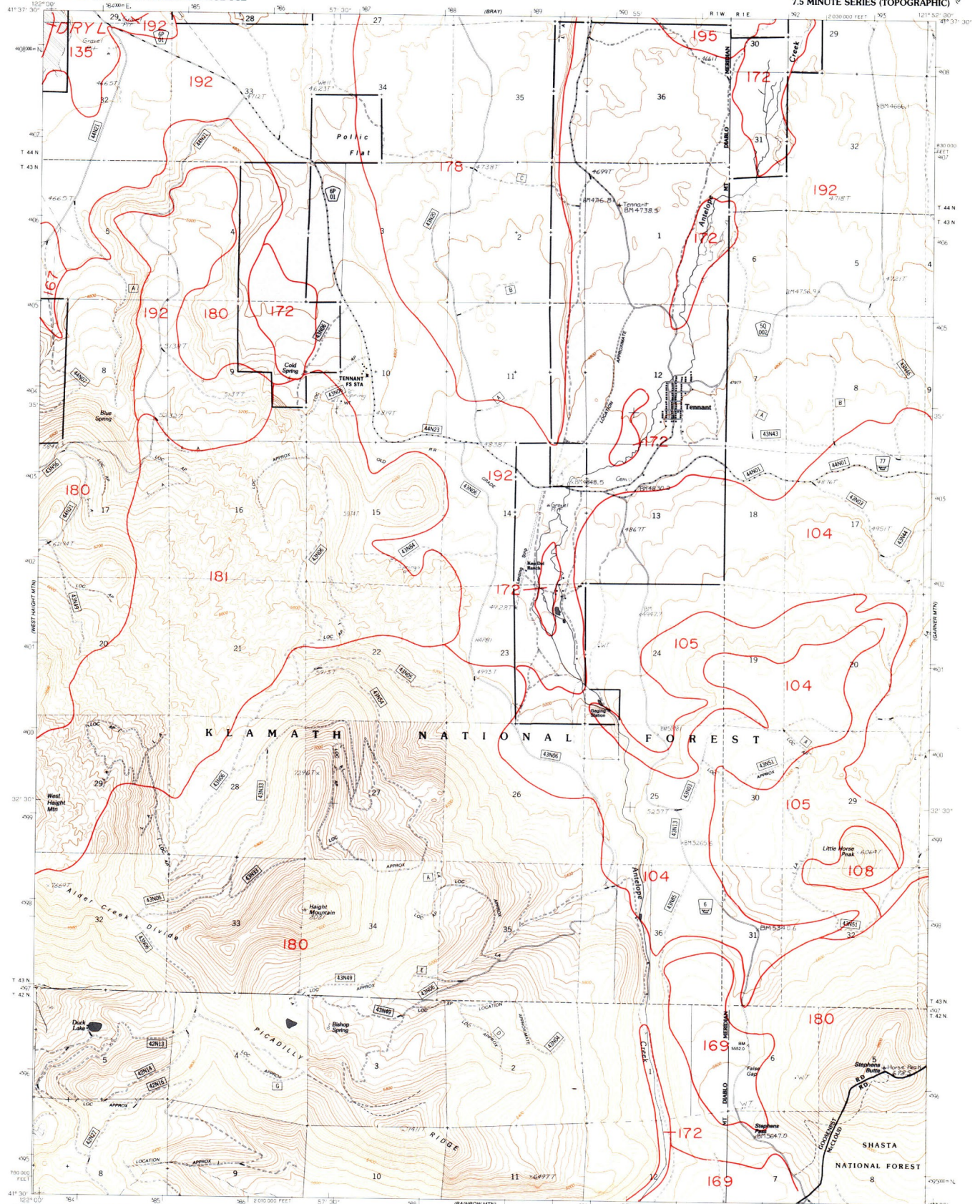
BRAY, CALIF.
PROVISIONAL EDITION 1988
N4137.5-W12152.5/7.5
714-2
REVISED 1992

ATTN: Road ticks indicate change between portions
photo identified and portions not visible on the aerial photography
Portions not visible will be labeled LOCATION APPROXIMATE

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

TENNANT QUADRANGLE
CALIFORNIA-SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY
COMPILED FROM AERIAL PHOTOGRAPHY TAKEN: 1965, 1966, 1967, 1968
FIELD CHECKED: 1965, 1966, 1967, 1968
MODIFICATION TO THE USGS PROVISIONAL BASE MAP BY THE
GEOLOGICAL SURVEY CENTER FROM 1969 AERIAL
PHOTOGRAPHY AND 1969 CORRECTION GUIDES FURNISHED BY
THE PACIFIC SOUTHWEST REGION
LAND REVISOR: J. L. HARRIS
LAND REVISOR: J. L. HARRIS

VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM: 1983 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
(18 meters north - 93 meters east)
Modification to the USGS provisional base map by the
GEOLOGICAL SURVEY CENTER FROM 1969 AERIAL
PHOTOGRAPHY AND 1969 CORRECTION GUIDES FURNISHED BY
THE PACIFIC SOUTHWEST REGION
LAND REVISOR: J. L. HARRIS
LAND REVISOR: J. L. HARRIS

UTM GRID AND 1983
MAGNETIC NORTH
DECLINATION AT
CENTER OF SHEET

National Forest Boundary
Non National Forest System Land
TOWNSHIP AND SECTION LINE CLASSIFICATION
Surveyed, Location Reliable
Surveyed, Location Approximate
Surveyed, Location Questionable
Unsurveyed
Locked Gate

CONTOUR INTERVAL 40 FEET
Primary Highway
Secondary Highway
Improved Road, Paved
Improved Road, Gravel
Unimproved Road, Native Surface
Unimproved Road, Not Maintained for
passenger cars
Unimproved Road
Trail

ROUTE MARKERS
Interstate
U.S.
State
County

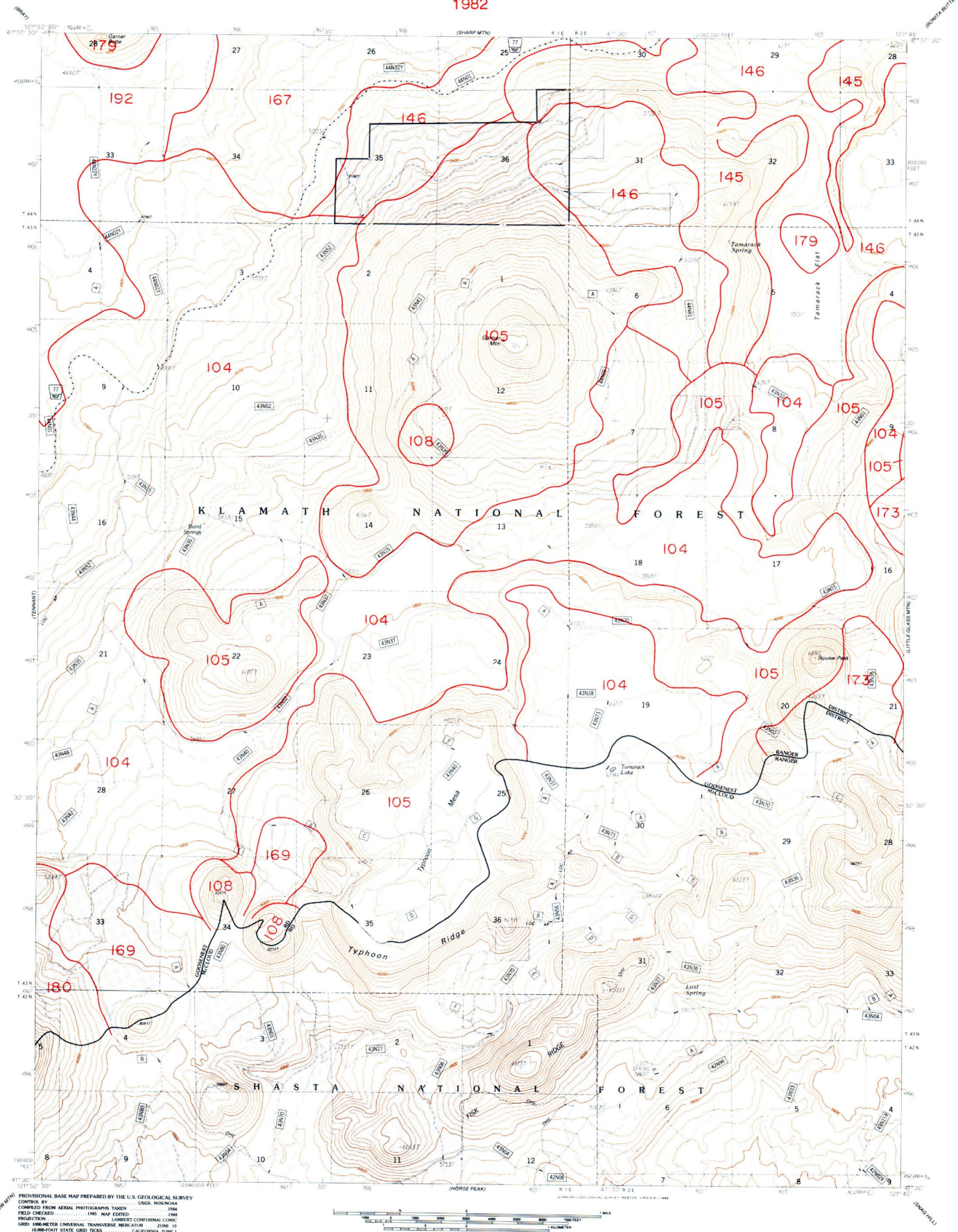
715.1	714.2	714.1
715.4	714.3	714.4
698.1	697.2	697.1

TENNANT, CALIF.
PROVISIONAL EDITION 1988
N4130-W12152.5.7.5

714-3

REVISED 1992

Klamath National Forest Order 3 Soil Survey 1982



VERTICAL DATUM - NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM - 1983 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983, move the projection lines as shown by dashed corner ticks
1.8 meters north - 53 meters east
Modification to the USGS provisional base map by the
Geomatics Service Center from 1989 aerial
photography and 1990 correction guides furnished by the
Pacific Southwest Region
Landnet revised according to additional Forest Service evidence

UTM GRID AND 1982
MAGNETIC NORTH
DECLINATION AT
CENTER OF SHEET

TOPOGRAPHIC AND SECTION LINE CLASSIFICATION

- Surveyed, Location Approximate
- Surveyed, Location Approximate
- Surveyed, Location Questionable
- Unsurveyed
- Locked Gate

CONTOUR INTERVAL 40 FEET

ROUTE MARKERS

- Primary Highway
- Secondary Highway
- Improved Road, Paved
- Improved Road, Gravel
- Unimproved Road, Native Surface (includes 4WD not maintained for passenger cars)
- Unimproved Road
- Trail

ROUTE MARKERS

- Interstate
- U.S.
- State
- County

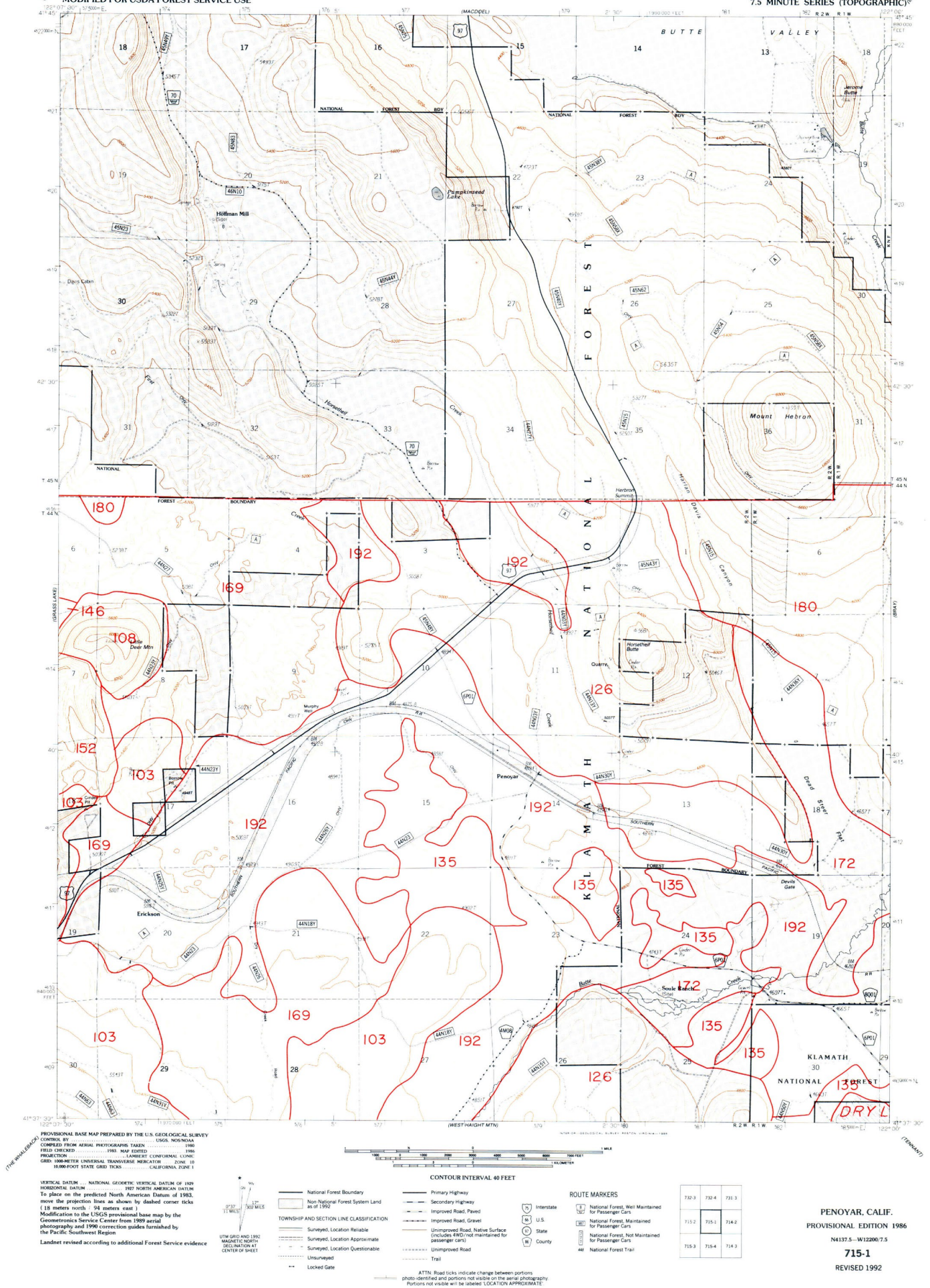
ROUTE MARKERS

- National Forest, Well Maintained for Passenger Cars
- National Forest, Maintained for Passenger Cars
- National Forest, Not Maintained for Passenger Cars
- National Forest Trail

GARNER MTN., CALIF.
PROVISIONAL EDITION 1988
N4130-W12145/7.5
714-4
REVISED 1992

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

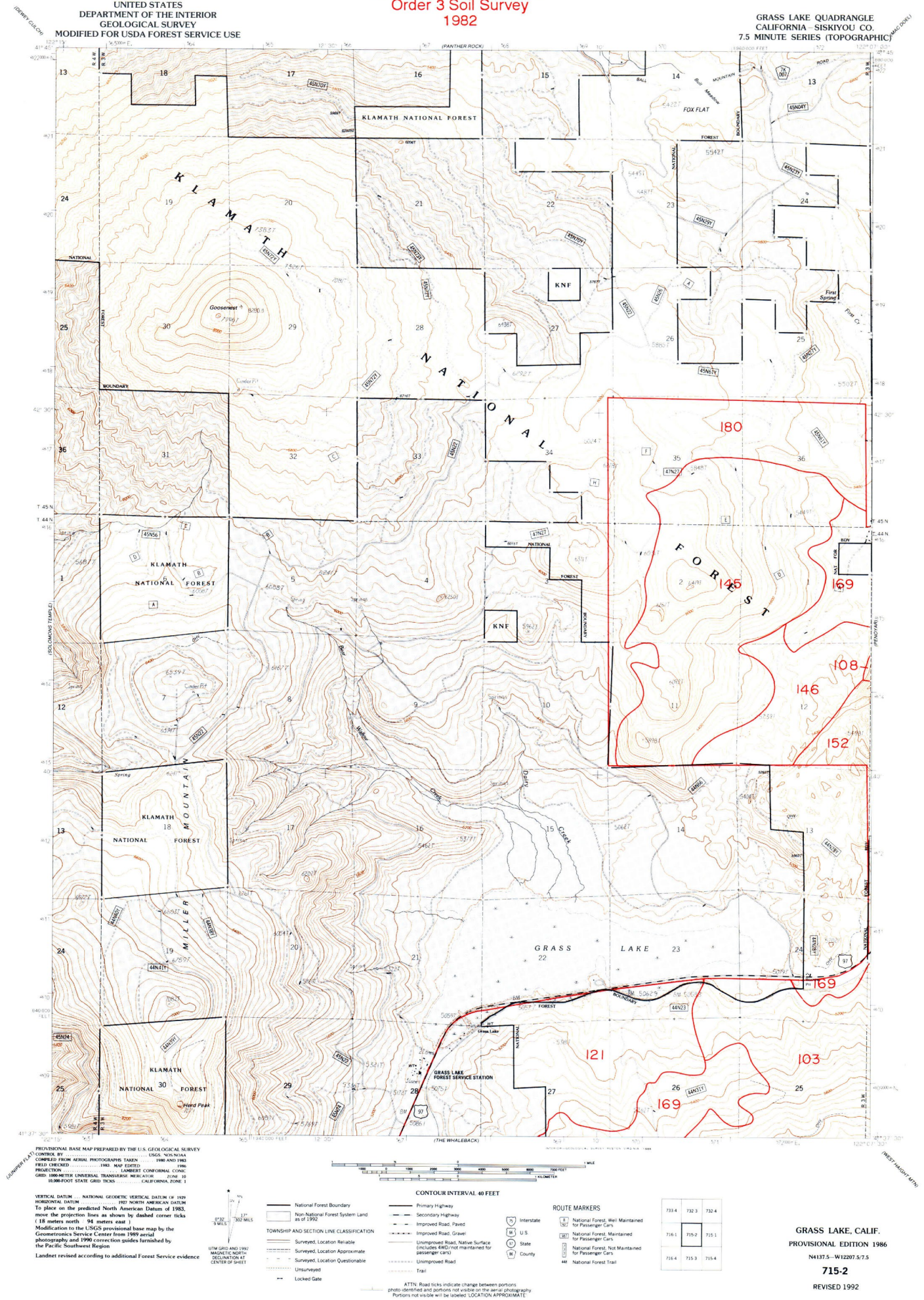
PENYOYAR QUADRANGLE
CALIFORNIA-SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

GRASS LAKE QUADRANGLE
CALIFORNIA-SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



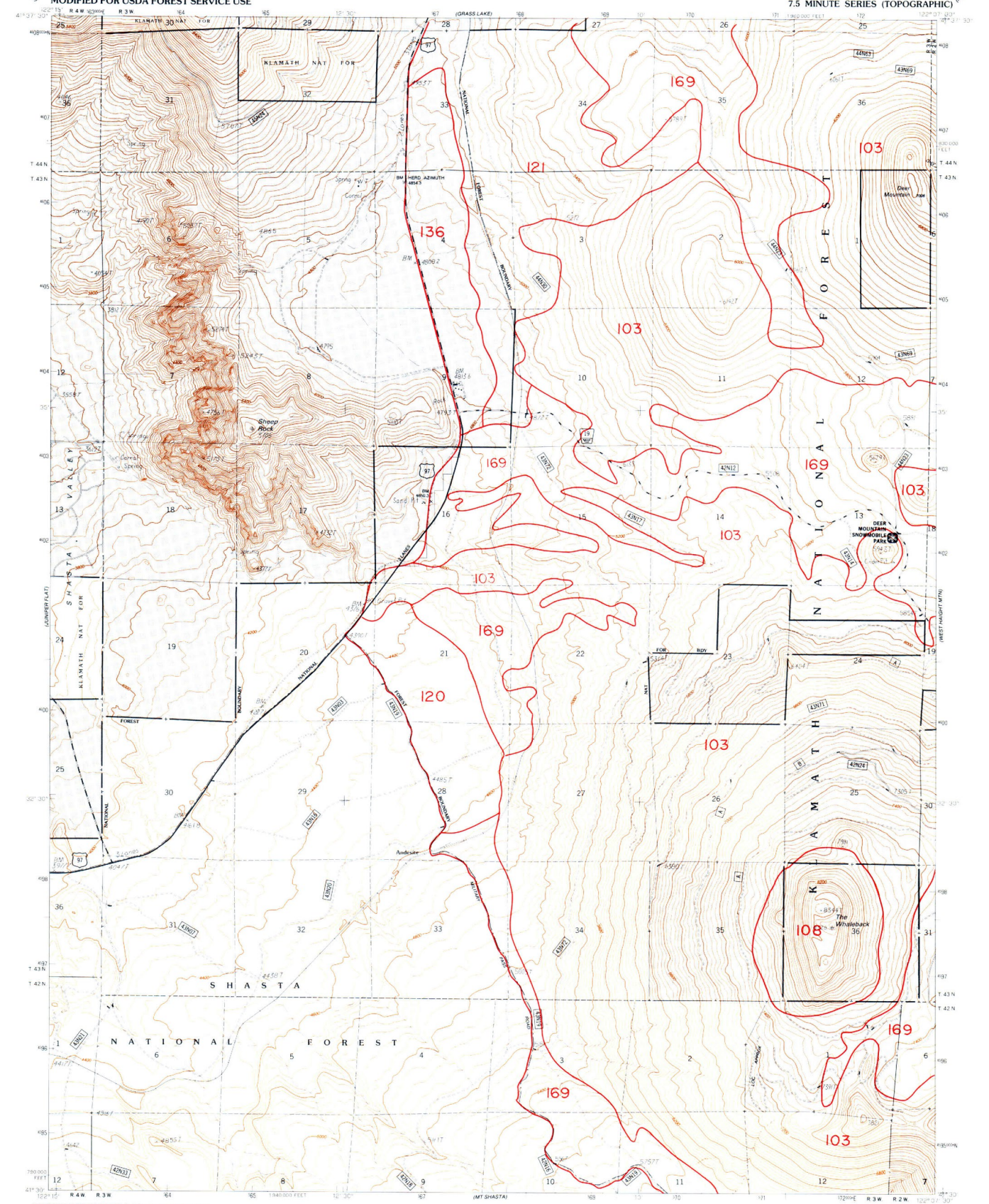
(SLOPE SCALE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

Klamath National Forest
Order 3 Soil Survey
1982

THE WHALEBACK QUADRANGLE
CALIFORNIA - SISKIYOU CO
7.5 MINUTE SERIES (TOPOGRAPHIC)

(PROVINCE)



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY U.S.G.S. PHOTOGRAPHY TAKEN 1980 AND 1982
FIELD CHECKED 1983 MAP EDITED 1986
MODIFICATION TO THE USGS PROVISIONAL BASE MAP BY THE
Geomatics Service Center from 1989 aerial
photography and 1996 correction guide furnished by
the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



- TOWNSHIP AND SECTION LINE CLASSIFICATION**
- Surveyed, Location Reliable
 - Surveyed, Location Approximate
 - Surveyed, Location Questionable
 - Unsurveyed
 - Locked Gate

- CONTOUR INTERVAL 40 FEET**
- Primary Highway
 - Secondary Highway
 - Improved Road, Paved
 - Improved Road, Gravel
 - Unimproved Road, Native Surface (includes 4WD not maintained for passenger cars)
 - Unimproved Road
 - Trail

- ROUTE MARKERS**
- National Forest, Well Maintained for Passenger Cars
 - National Forest, Maintained for Passenger Cars
 - National Forest, Not Maintained for Passenger Cars
 - National Forest Trail

716.1	715.2	715.1
716.4	715.3	715.4
699.1	698.2	698.1

THE WHALEBACK, CALIF.
PROVISIONAL EDITION 1986

N4130-W12207.5/7.5
715-3

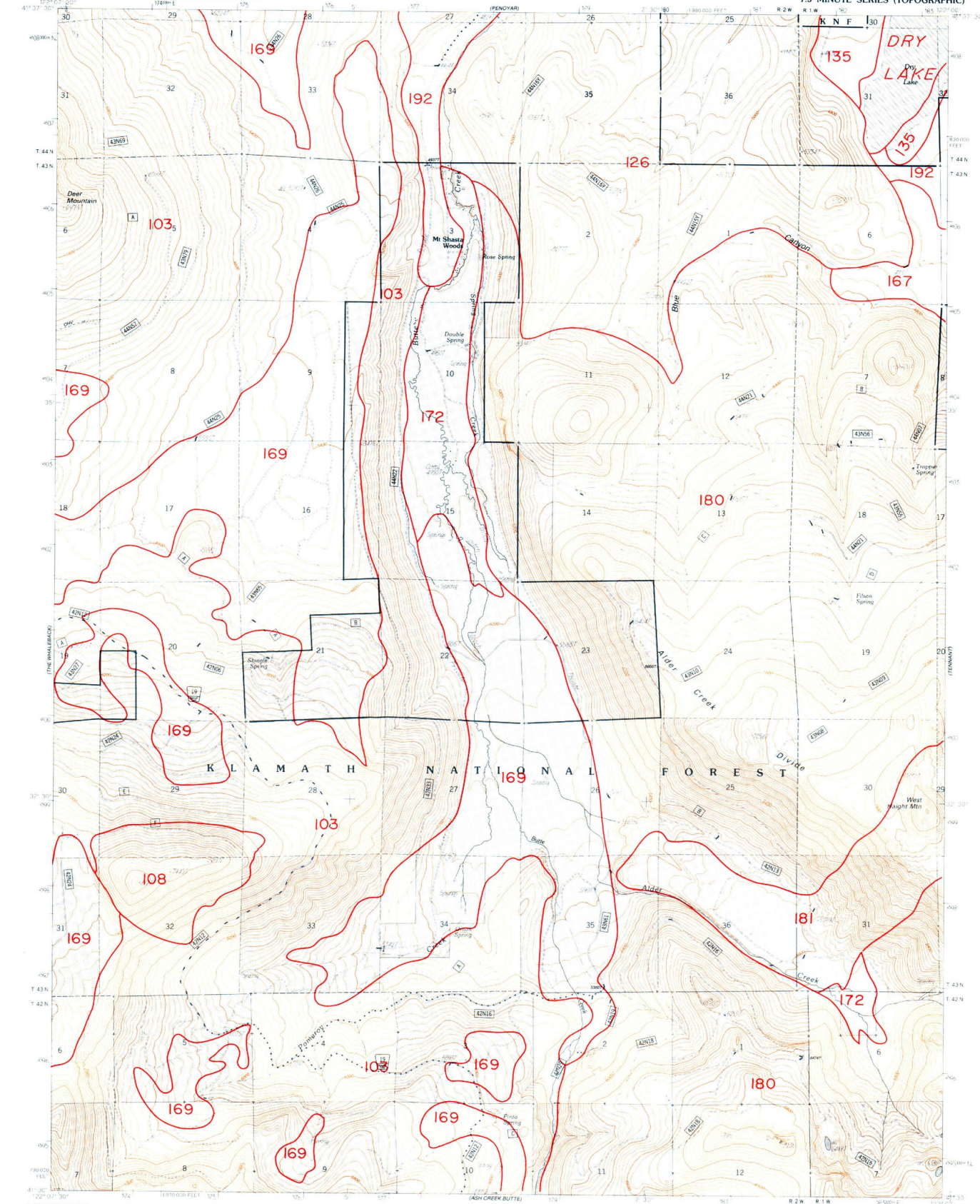
REVISED 1992

ATTN: Road ticks indicate change between portions
photo identified and portions not visible on the aerial photography
Portions not visible will be labeled 'LOCATION APPROXIMATE.'

Klamath National Forest Order 3 Soil Survey 1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

WEST HAIGHT MTN. QUADRANGLE
CALIFORNIA SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY COMPILED FROM AERIAL PHOTOGRAPHS TAKEN
FIELD CHECKED 1981 MAP EDITED 1982 AND 1983
PROJECTION: LAMBERT CONFORMAL CONIC
GRID: 100-METER UNIVERSAL TRANSVERSE MERCATOR
HORIZONTAL DATUM: NAD 83 (CALIFORNIA ZONE 1)

VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM of 1929
HORIZONTAL DATUM: 1983 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
(1.8 meters north - 93 meters east)
Modification to the USGS provisional base map by the
Geomatics Service Center from 1980 aerial
photography and 1990 correction guides furnished by
the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence

VIEW GRID AND 1983
MAGNETIC NORTH
SECTIONAL
CENTER OF SHEET

CONTOUR INTERVAL 40 FEET

TOWNSHIP AND SECTION LINE CLASSIFICATION

- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Surveyed, Location Questionable
- Unsurveyed
- Locked Gate

ROUTE MARKERS

- National Forest Boundary
- Non-National Forest System Land as of 1992
- Primary Highway
- Secondary Highway
- Improved Road, Paved
- Improved Road, Gravel
- Unimproved Road, Native Surface (includes GVD not maintained for passenger cars)
- Unimproved Road
- Trail

ROUTE MARKERS

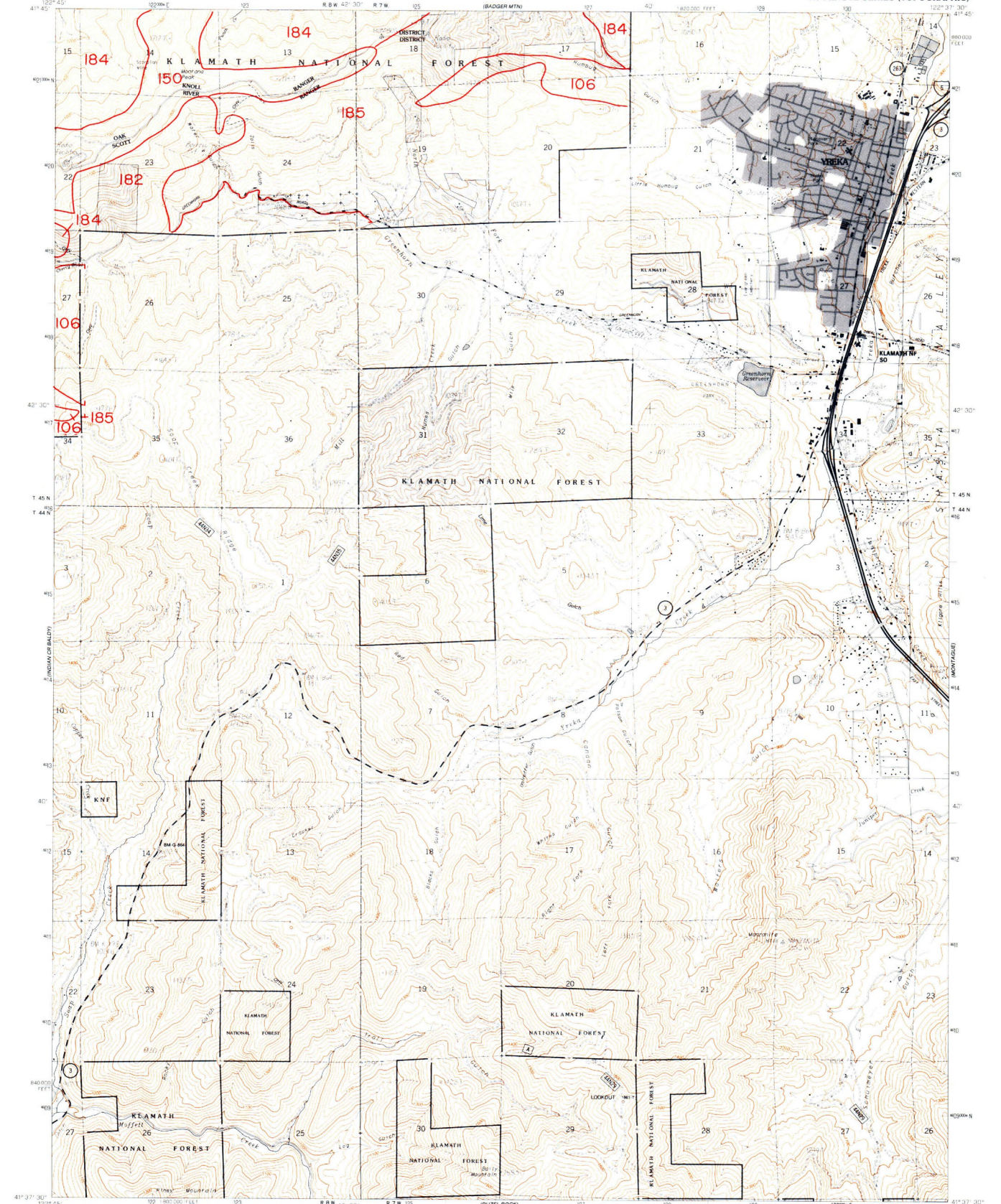
- National Forest, Well Maintained for Passenger Cars
- National Forest, Maintained for Passenger Cars
- National Forest, Not Maintained for Passenger Cars
- National Forest Trail

715.0	715.1	715.2
715.3	715.4	715.5
698.0	698.1	698.2

WEST HAIGHT MTN., CALIF.
PROVISIONAL EDITION 1986
N4130-W12200/7.5

715-4
REVISED 1992

Klamath National Forest
Order 3 Soil Survey
1982



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROLLED BY: 1974 AND 1978 PHOTOGRAPHS TAKEN BY THE U.S. GEOLOGICAL SURVEY
FIELD CHECKED BY: 1982 AND 1984 PHOTOGRAPHS TAKEN BY THE U.S. GEOLOGICAL SURVEY
PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM: 1983 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
(19 meters north, 94 meters east)
Modification to the USGS provisional base map by the
Geomatics Service Center from 1989 aerial
photography and 1990 correction guides furnished by
the Pacific Southwest Region
Land use revised according to additional Forest Service evidence

CONTOUR INTERVAL 20 METERS
SUPPLEMENTARY CONTOUR INTERVAL 5 METERS

Legend:

- National Forest Boundary
- Non-National Forest System Land
- TOWNSHIP AND SECTION LINE CLASSIFICATION
- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Surveyed, Location Questionable
- Unsurveyed
- Locked Gate
- Primary Highway
- Secondary Highway
- Improved Road, Paved
- Improved Road, Gravel
- Unimproved Road, Native Surface
- Unimproved Road, Not Maintained for Passenger Cars
- Unimproved Road
- Trail

ROUTE MARKERS

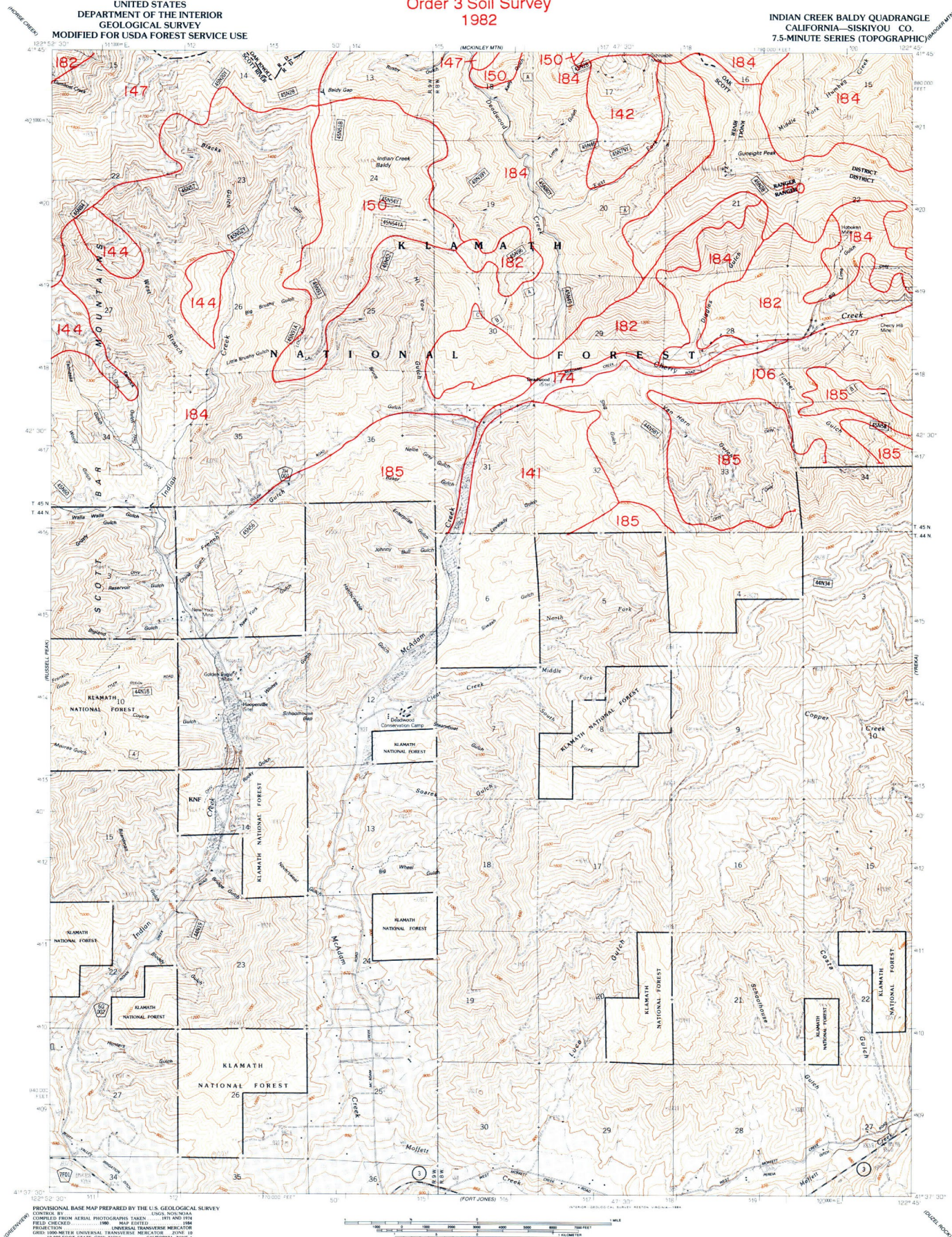
- Interstate
- U.S.
- State
- County
- National Forest, well Maintained for Passenger Cars
- National Forest, Maintained for Passenger Cars
- National Forest, Not Maintained for Passenger Cars
- National Forest Trail

735.4	734.3	734.4
718.5	717.2	717.1
718.4	717.3	717.4

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

INDIAN CREEK BALDY QUADRANGLE
CALIFORNIA—SISKIYOU CO.
7.5-MINUTE SERIES (TOPOGRAPHIC)



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY: USGS, NORTON
FIELD CHECKED: 1980 MAP EDITED: 1984
MODIFICATION TO THE 1980 PROVISIONAL BASE MAP BY THE
Geometric Service Center from 1989 aerial
photography and 1990 correction guides furnished by
the Pacific Southwest Region
Landmark revised according to additional Forest Service evidence

TOWNSHIP AND SECTION LINE CLASSIFICATION
— Surveyed, Location Reliable
— Surveyed, Location Approximate
— Surveyed, Location Questionable
— Unsurveyed
— Locked Gate

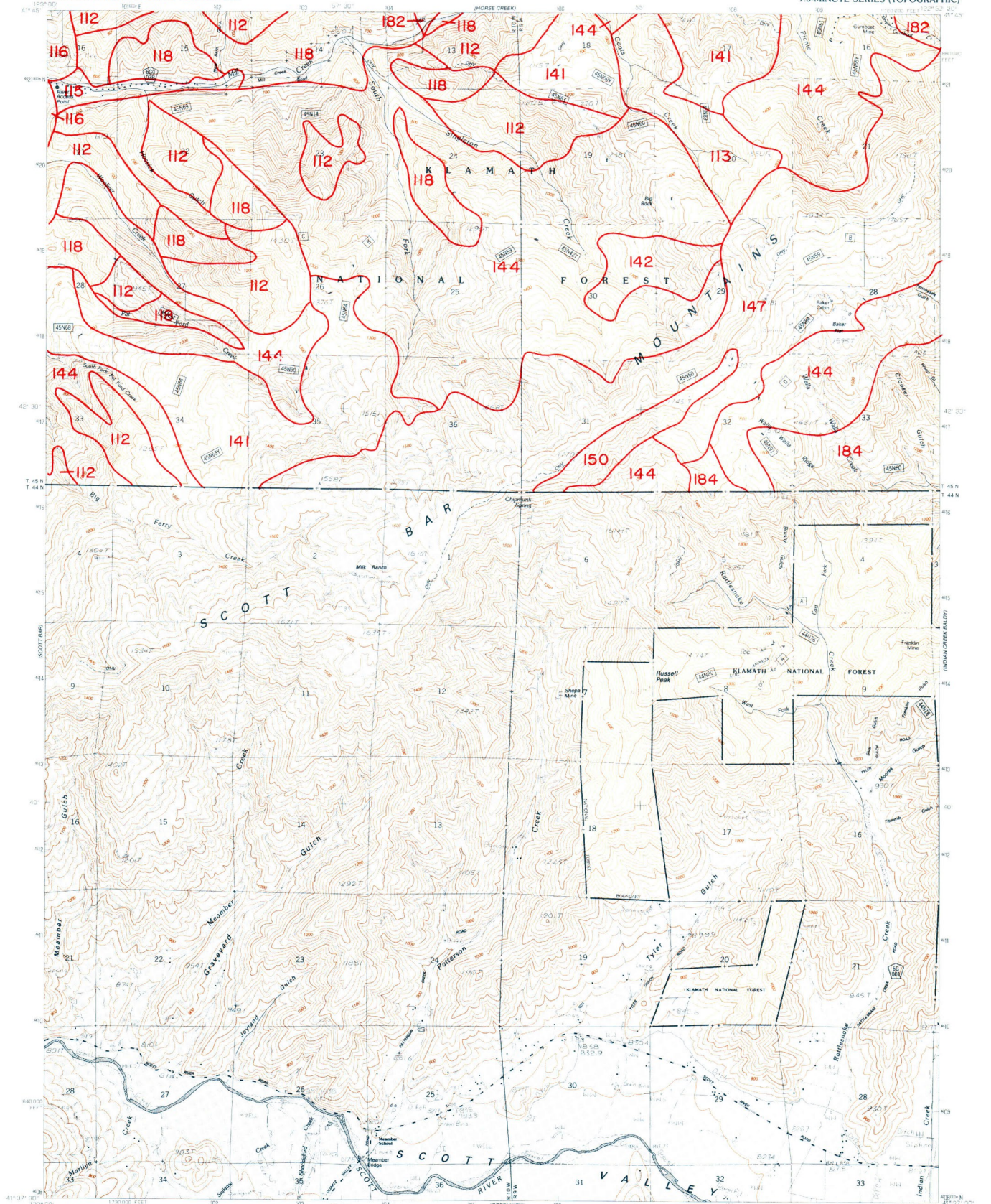
CONTOUR INTERVAL 20 METERS
SUPPLEMENTARY CONTOUR INTERVAL 1 METERS
— Primary Highway
— Secondary Highway
— Improved Road, Paved
— Improved Road, Gravel
— Unimproved Road, Native Surface
— Unimproved Road, Not Maintained
— Unimproved Road
— Trail

ROUTE MARKERS
— Interstate
— U.S.
— State
— County

735.3 735.4 734.3
718.2 718.1 717.2
718.3 718.4 717.3

INDIAN CREEK BALDY, CALIF.
PROVISIONAL EDITION 1984
N4137.5—W12245.7.5
718-1
REVISED 1992

Klamath National Forest
Order 3 Soil Survey
1982



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY: USGS 100-N-100A
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN: 1979 AND 1981
FIELD CHECKED: 1980 MAP EDITED: 1984
PROJECTION: UTM
UNIVERSAL TRANSVERSE MERCATOR
GRID: 1000 METER UNIVERSAL TRANSVERSE MERCATOR - ZONE 18
100000 FOOT STATE GRID TICS: CALIFORNIA ZONE 1

VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM: 1983 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
(20 meters north 95 meters east)
There may be private inholdings within the boundaries of any
Federal and State Reservations shown on this map.
Certain land lines are omitted because of insufficient data.
Modification to the USGS provisional base map by the
Geomatics Service Center from 1989 aerial
photography and 1990 correction guides furnished by
the Pacific Southwest Region.
Landset revised according to additional Forest Service evidence



TOWNSHIP AND SECTION LINE CLASSIFICATION

- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Surveyed, Location Questionable
- Unsurveyed
- Locked Gate

CONTOUR INTERVAL 20 METERS

- National Forest Boundary
- Non National Forest System Land as of 1992
- Primary Highway
- Secondary Highway
- Improved Road, Paved
- Improved Road, Gravel
- Unimproved Road, Native Surface (includes AND not maintained for passenger cars)
- Unimproved Road
- Trail

ROUTE MARKERS

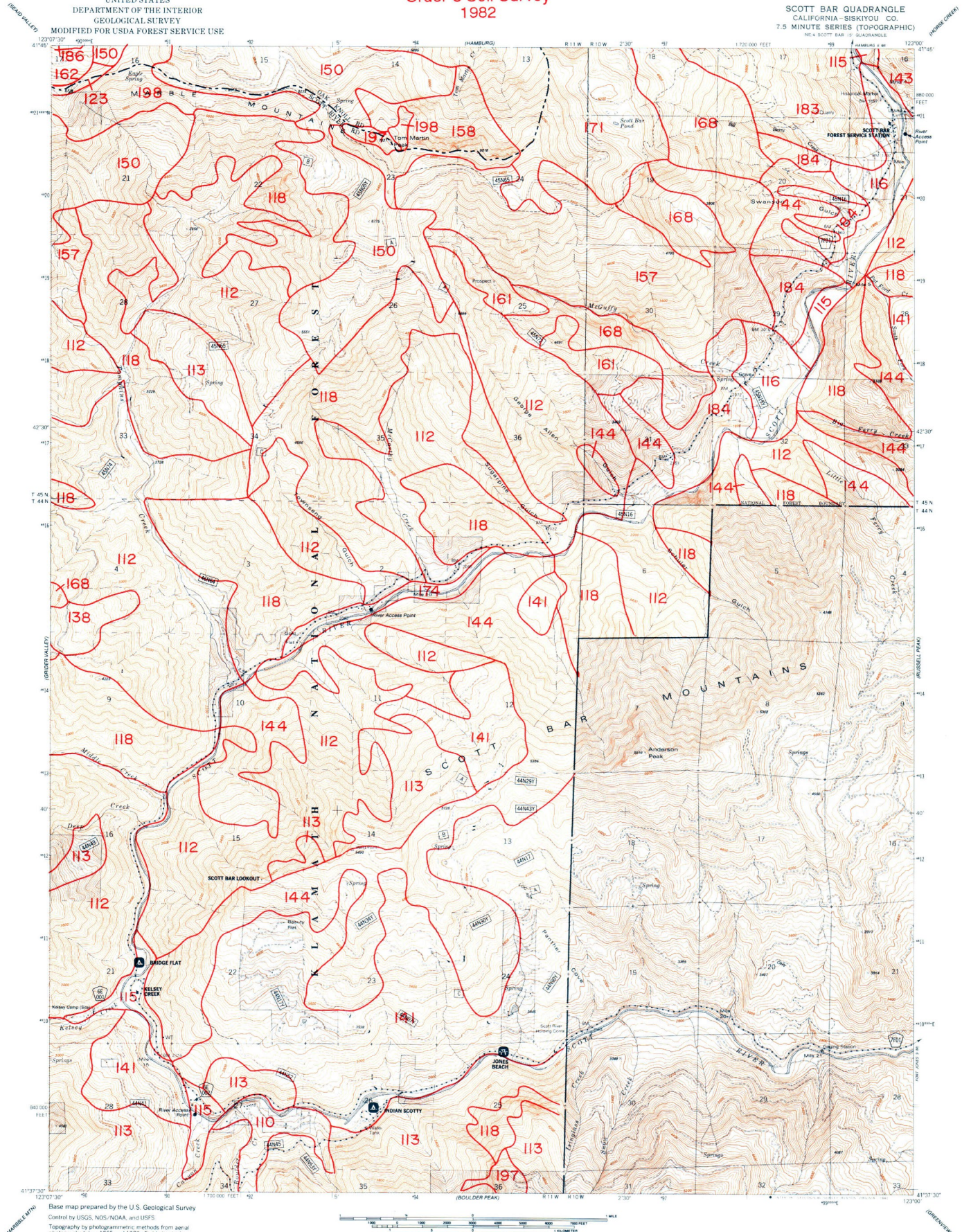
- National Forest, Well Maintained for Passenger Cars
- National Forest, Maintained for Passenger Cars
- National Forest, Not Maintained for Passenger Cars
- National Forest Trail

736.4	735.3	735.4
719.1	718.2	718.1
719.4	718.3	718.4

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

SCOTT BAR QUADRANGLE
CALIFORNIA-SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
NE 4 SCOTT BAR 15 QUADRANGLE



Base map prepared by the U.S. Geological Survey

Control by USGS, NDS/NDAA, and USFS
Topography by photogrammetric methods from aerial
photographs taken 1965 and 1972. Field checked
by USGS 1975. Map edited 1980.

Projection and 10,000-foot grid ticks: California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid, zone 10
1983 North American Datum

To place on the predicted North American Datum 1983
move the projection lines 20 meters north and
95 meters east as shown by dotted corner ticks.

Certain land lines are omitted because of insufficient data.
Modification to the USGS base map by the Geomorphology
Service Center from 1989 aerial photography and 1990
correction guides furnished by the Pacific Southwest Region.

Landnet revised according to additional Forest Service evidence.



- TOPOGRAPHIC AND SECTION LINE CLASSIFICATION**
- National Forest Boundary
 - Non-National Forest System Land
 - Surveyed, Location Reliable
 - Surveyed, Location Approximate
 - Surveyed, Location Questionable
 - Unsurveyed
 - Locked Gate

- CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929**
- Primary Highway
 - Secondary Highway
 - Improved Road, Paved
 - Improved Road, Gravel
 - Unimproved Road, Native Surface (includes 4WD/road not maintained for passenger cars)
 - Unimproved Road
 - Trail

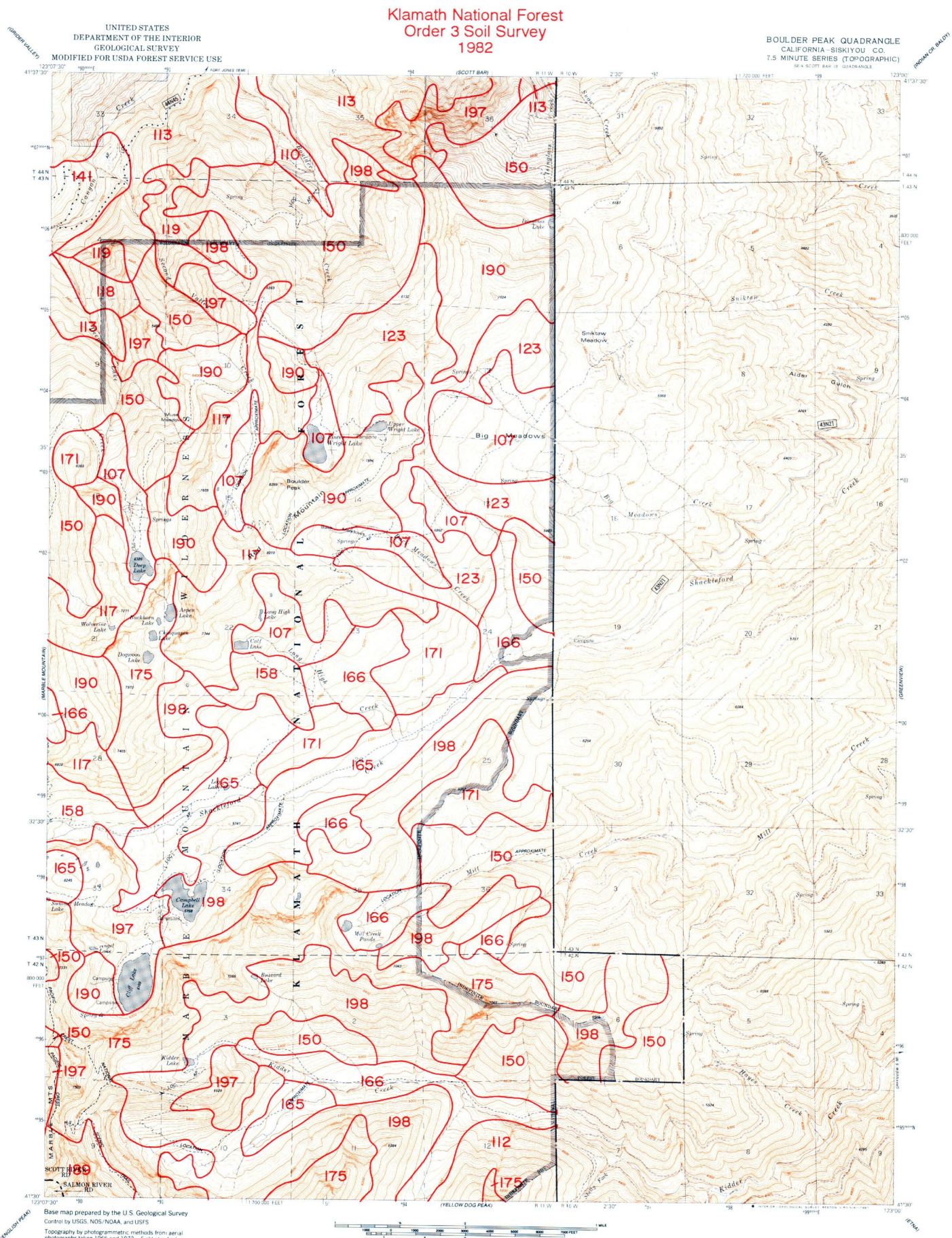
- ROUTE MARKERS**
- National Forest, Well Maintained for Passenger Cars
 - National Forest, Maintained for Passenger Cars
 - National Forest, Not Maintained for Passenger Cars
 - National Forest Trail

736.3	736.4	736.5
719.2	719.1	719.0
719.3	719.4	719.5

SCOTT BAR, CALIF.
NE 4 SCOTT BAR 15 QUADRANGLE
N4137.5-W72300.7.5

1980
DMA 1567 15 NE-SERIES V685

719-1
REVISED 1992



Base map prepared by the U.S. Geological Survey

Control by USGS, NOS/NOAA, and USFS

Topography by photogrammetric methods from aerial photographs taken 1963 and 1972. Field checked by USGS 1975. Map edited 1981.

Projection and 10,000-foot grid ticks, California coordinate system, zone 1 (Lambert conformal conic). 1000-meter Universal Transverse Mercator grid, zone 10, 1983 North American Datum.

To place on the predicted North American Datum 1983 move the projection lines 20 meters north and 95 meters east as shown by dashed corner ticks.

Certain land lines are omitted because of insufficient data.

Modification to the USGS base map by the Geomorphics Service Center from 1989 aerial photography and 1990 correction guides furnished by the Pacific Southwest Region.

Landnet revised according to additional Forest Service evidence.



TOWNSHIP AND SECTION LINE CLASSIFICATION

- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Surveyed, Location Questionable
- Unsurveyed
- Locked Gate

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Primary Highway
Secondary Highway
Improved Road, Paved
Improved Road, Gravel
Unimproved Road, Native Surface (includes KWS not maintained for passenger cars)
Unimproved Road
Trail

ROUTE MARKERS

1 National Forest, Well Maintained for Passenger Cars
167 National Forest, Maintained for Passenger Cars
187 National Forest, Not Maintained for Passenger Cars
400 National Forest Trail

719.2	719.1	718.2
719.3	719.4	718.3
702.2	702.1	701.2

BOULDER PEAK, CALIF.

SCOTT BAR 19 QUADRANGLE
N4130-W12300-7.5

1981

DMA 1987 8 SE-SERIES 1985

719.4

REVISED 1992

Klamath National Forest Order 3 Soil Survey 1982

HUCKLEBERRY MTN. QUADRANGLE
CALIFORNIA SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
NE 4 UNIFORM LANE 15 QUADRANGLE



Control by USGS, NOS/NOAA, and USFS
Topography by photogrammetric methods from aerial photographs
taken 1965 and 1972. Field checked by USGS 1975
Map edited 1980
Projection and 10,000 foot grid ticks, California coordinate
system, zone 1 (Lambert conformal conic)
1000 meter Universal Transverse Mercator grid, zone 10
1927 North American Datum
To place on the predicted North American Datum 1983
move the projection lines 20 meters north and
35 meters east as shown by dashed corner ticks
Certain land lines are omitted because of insufficient data
Modification to the USGS base map by the Geomorphology
Service Center from 1989 aerial photography and 1990
correction guides furnished by the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence

UTM GRID AND 1982
MODIFIED TO
OCCUPATION AT
CENTER OF SHEET

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Primary Highway
Secondary Highway
Improved Road, Paved
Improved Road, Gravel
Unimproved Road, Native Surface
Unimproved Road, Not Maintained for
Passenger Cars
Unimproved Road
Trail

National Forest Boundary
Non National Forest System Land
AT 1992

TOWNSHIP AND SECTION LINE CLASSIFICATION

Surveyed, Location Reliable
Surveyed, Location Approximate
Surveyed, Location Questionable
Unsurveyed
Locked Gate

ROUTE MARKERS

Interstate
U.S.
State
County
National Forest Trail

ATTN: Road ticks indicate change between portions
photo identified and portions not visible on the aerial photography
Portions not visible will be labeled LOCATION APPROXIMATE

737.3	737.4	736.3
720.2	720.3	719.2
720.3	720.4	719.3

Klamath National Forest
Order 3 Soil Survey
1982

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

UKONOM MTN. QUADRANGLE
CALIFORNIA-SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
S.W. 1:50,000 1:62,500 1:62,500



Base map prepared by the U.S. Geological Survey
Control by USGS, NOS/NOAA, and USFS
Topography by photogrammetric methods from aerial
photographs taken 1965 and 1972. Field checked by USGS 1975
Map edited 1980

Projection and 10,000 foot grid ticks: California coordinate
system, zone 10 (Lambert conformal conic)
1000 meter Universal Transverse Mercator grid, zone 10
1927 North American Datum

To place on the predicted North American Datum 1983
move the projection lines 20 meters north and
95 meters east as shown by dashed corner ticks
Certain land lines are omitted because of insufficient data

Modification to the USGS base map by the Geomorphics
Service Center from 1985 aerial photography and 1990
correction guides furnished by the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



- Legend**
- National Forest Boundary
 - Non-National Forest System Land as of 1992
 - TOWNSHIP AND SECTION LINE CLASSIFICATION
 - Surveyed, Location Reliable
 - Surveyed, Location Approximate
 - Surveyed, Location Questionable
 - Unsurveyed
 - Locked Gate

- Legend**
- Primary Highway
 - Secondary Highway
 - Improved Road, Paved
 - Improved Road, Gravel
 - Unimproved Road, Native Surface (includes 4WD not maintained for passenger cars)
 - Unimproved Road
 - Trail

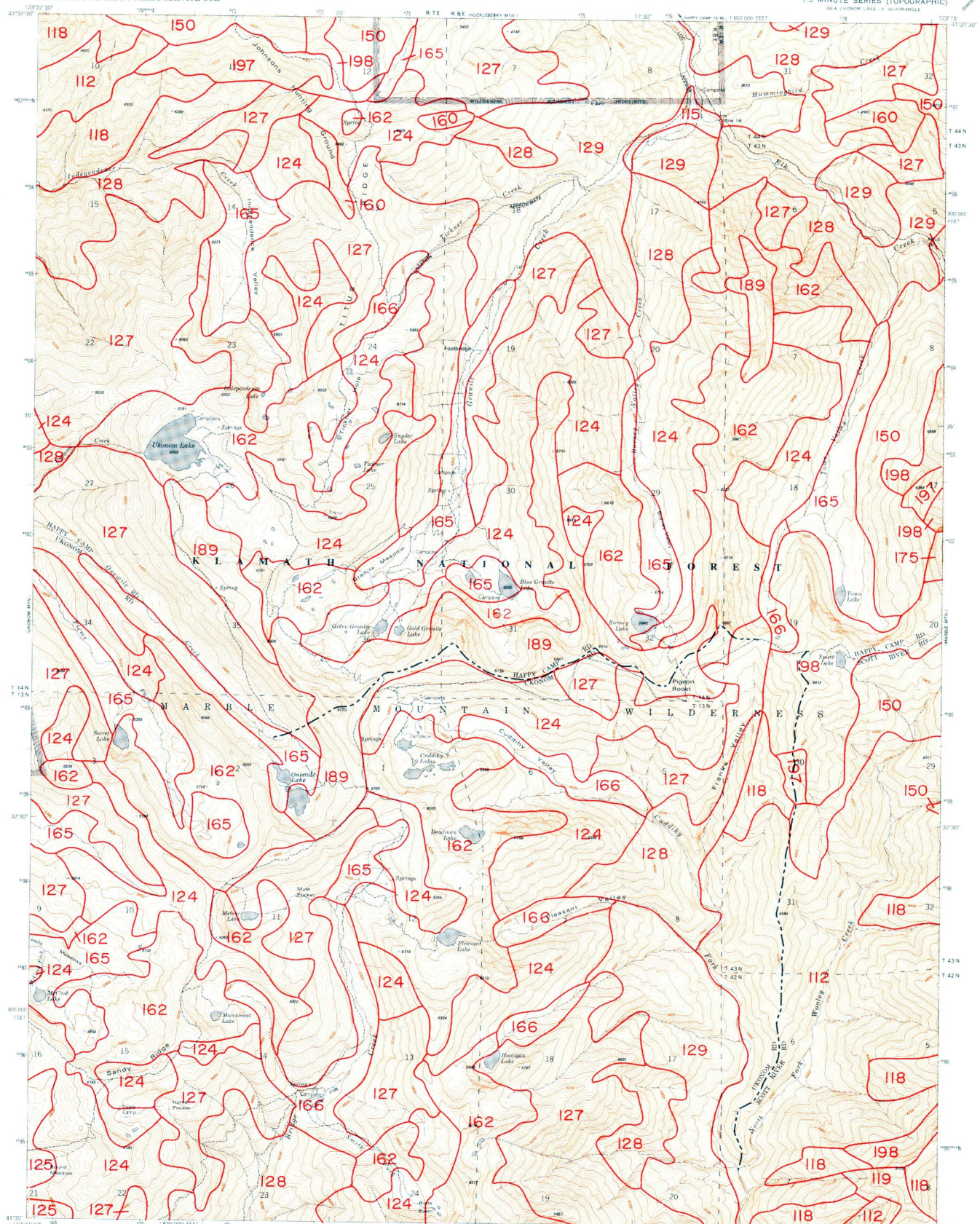
- ROUTE MARKERS**
- 1 National Forest, Well Maintained for Passenger Cars
 - 2 National Forest, Maintained for Passenger Cars
 - 3 National Forest, Not Maintained for Passenger Cars
 - 4 National Forest Trail

720.1	720.2	720.3
720.4	720.5	720.6
720.7	720.8	720.9

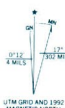
UKONOM MTN., CALIF.
S.W. 1:50,000 1:62,500 1:62,500
1980
DMA 1367 10 SW-SERIES V8M5
720-3
REVISED 1992

Klamath National Forest
Order 3 Soil Survey
1982

UKONOM LAKE QUADRANGLE
CALIFORNIA-SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SERIES UKONOM LAKE 1:50,000



Base map prepared by the U.S. Geological Survey
Control by USGS, NOS/NOAA and USFS
Topography by photogrammetric methods from aerial
photographs taken 1965 and 1972. Field checked
by USGS 1975. Map edited 1980.
Projection and 10,000 foot grid ticks: California coordinate
system, zone 1 (Lambert conformal conic)
2000 meter Universal Transverse Mercator grid, zone 10
1983 North American Datum.
To place on the predicted North American Datum 1983
move the projection lines 20 meters north and
95 meters east as shown by dashed corner ticks.
Modification to the USGS base map by the Geomatics
Service Center from 1989 aerial photography and 1990
correction guides furnished by the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



- TOWNSHIP AND SECTION LINE CLASSIFICATION**
- National Forest Boundary
 - Non National Forest System Land as of 1992
 - Surveyed Location Reliable
 - Surveyed Location Approximate
 - Unsurveyed Location Questionable
 - Unsurveyed
 - Locked Gate

- CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929**
- Primary Highway
 - Secondary Highway
 - Improved Road, Paved
 - Improved Road, Gravel
 - Unimproved Road, Native Surface (includes AWD not maintained for passenger cars)
 - Unimproved Road
 - Trail

- ROUTE MARKERS**
- National Forest, Well Maintained for Passenger Cars
 - National Forest, Maintained for Passenger Cars
 - National Forest, Not Maintained for Passenger Cars
 - National Forest Trail

720.2	720.1	719.2
720.3	720.4	719.1
720.2	720.1	720.2

UKONOM LAKE, CALIF.
SERIES UKONOM LAKE 1:50,000
720-3-720-4-720-2

1980



DMA 1367 (1) SE. SERIES 9886

720-4





REVISED 1992

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

correction guides furnished by the Pacific Southwest Re-

 National Forest Boundary
 Non-National Forest System Land as of 1992

TOWNSHIP AND SECTION LINE CLASSIFICATION

 Surveyed, Location Reliable
 Surveyed, Location Approximate
 Surveyed, Location Questionable
 Unsurveyed
 Locked Gate

Unimproved Road

446 National Forest

738-3	738-4	737-3
721-2	721-3	720-2
721-3	721-4	720-3

721.1

REVISED 1992

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

CHIMNEY ROCK QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
SW 4 SILLON MTH. 15 QUADRANGLE



Base map prepared by the U.S. Geological Survey

Control by USGS and NGS/NOAA

Topography by photogrammetric methods from aerial

photographs taken 1975-1976. Field checked 1977

Map revised 1981

Projection and 10,000-foot grid ticks: California coordinate

system, zone 11 (Lambert conformal conic)

1000 meter Universal Transverse Mercator grid, zone 10

1983 North American Datum

To place on the predicted North American Datum 1983

move the projection lines 20 meters north and

36 meters east as shown by dashed corner ticks

Modification to USGS base map by the USDA Forest Service

Geomatics Service Center from 1988-89 aerial photography and

1990 correction guides furnished by the Pacific Southwest Region

Landnet revised according to additional Forest Service evidence

CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

- TOWNSHIP AND SECTION LINE CLASSIFICATION**
- Surveyed, Location Reliable
 - Surveyed, Location Approximate
 - Surveyed, Location Questionable
 - Unsurveyed, Production
 - Unsurveyed, Protection
- ROAD CLASSIFICATION**
- National Forest Boundary
 - Non Forest Lands as of 1990
 - Primary Highway
 - Secondary Highway
 - Improved Road, Paved
 - Improved Road, Gravel
 - Improved Road, Dirt
 - Unimproved Road, Dirt
 - Unimproved Road, Dirt
 - Trail
 - Locked Gate
- OTHER FEATURES**
- Interstate Highway
 - U.S. Highway
 - State Highway
 - County Road
 - Primary Forest Route
 - Forest Road
 - Forest Trail

722 1C	721 2C	721 3C
722 4C	721 3C	721 4C
705 1C	704 2C	704 3C

CHIMNEY ROCK, CALIF.

SW 4 SILLON MTH. 15 QUADRANGLE

741301 9112231 5/75

1981

DMA 1287 11 SW SERIES 1985

721-3C

REVISED 1990

ATTN: Road ticks indicate change between portions

photo identified and portions not visible on the aerial photography

Portions not visible will be labeled LOCATION APPROXIMATE

Klamath National Forest
Order 3 Soil Survey
1982



Base map prepared by the U.S. Geological Survey
Control by USGS and NGS/NOAA

Topography by photogrammetric methods from aerial
photographs taken 1975-76. Field checked 1977.
Map edited 1983

Projection and 10,000 foot grid ticks. California coordinate
system, zone 10. Lambert conformal conic.
1000-meter Universal Transverse Mercator grid, zone 10.
1927 North American Datum.

To place on the predicted North American Datum 1983,
move the projection lines 20 meters north and
96 meters east as shown by dashed corner ticks.

Modification to the USGS base map by the Geomorphology
Service Center from 1989 aerial photography and 1990
correction guides furnished by the Pacific Southwest Region.

Landmark revised according to additional Forest Service evidence.



- TOWNSHIP AND SECTION LINE CLASSIFICATION**
- Surveyed, Location Reliable
 - Surveyed, Location Approximate
 - Surveyed, Location Questionable
 - Unsurveyed
 - Locked Gate

- CONTOUR INTERVAL 80 FEET**
NATIONAL GEODETIC VERTICAL DATUM OF 1929
- Primary Highway
 - Secondary Highway
 - Improved Road, Paved
 - Improved Road, Gravel
 - Unimproved Road, Native Surface (includes AND not maintained for passenger cars)
 - Unimproved Road
 - Trail

- ROUTE MARKERS**
- National Forest, Well Maintained for Passenger Cars
 - National Forest, Maintained for Passenger Cars
 - National Forest, Not Maintained for Passenger Cars
 - National Forest Trail

721.2	721.1	720.2
721.1	721.4	720.3
704.2	704.1	703.2

DILLON MTN. CALIF.

7.5-MINUTE SERIES
N4130-W12330-7.5

1983
DMA 1267 R SE, SERIES V895

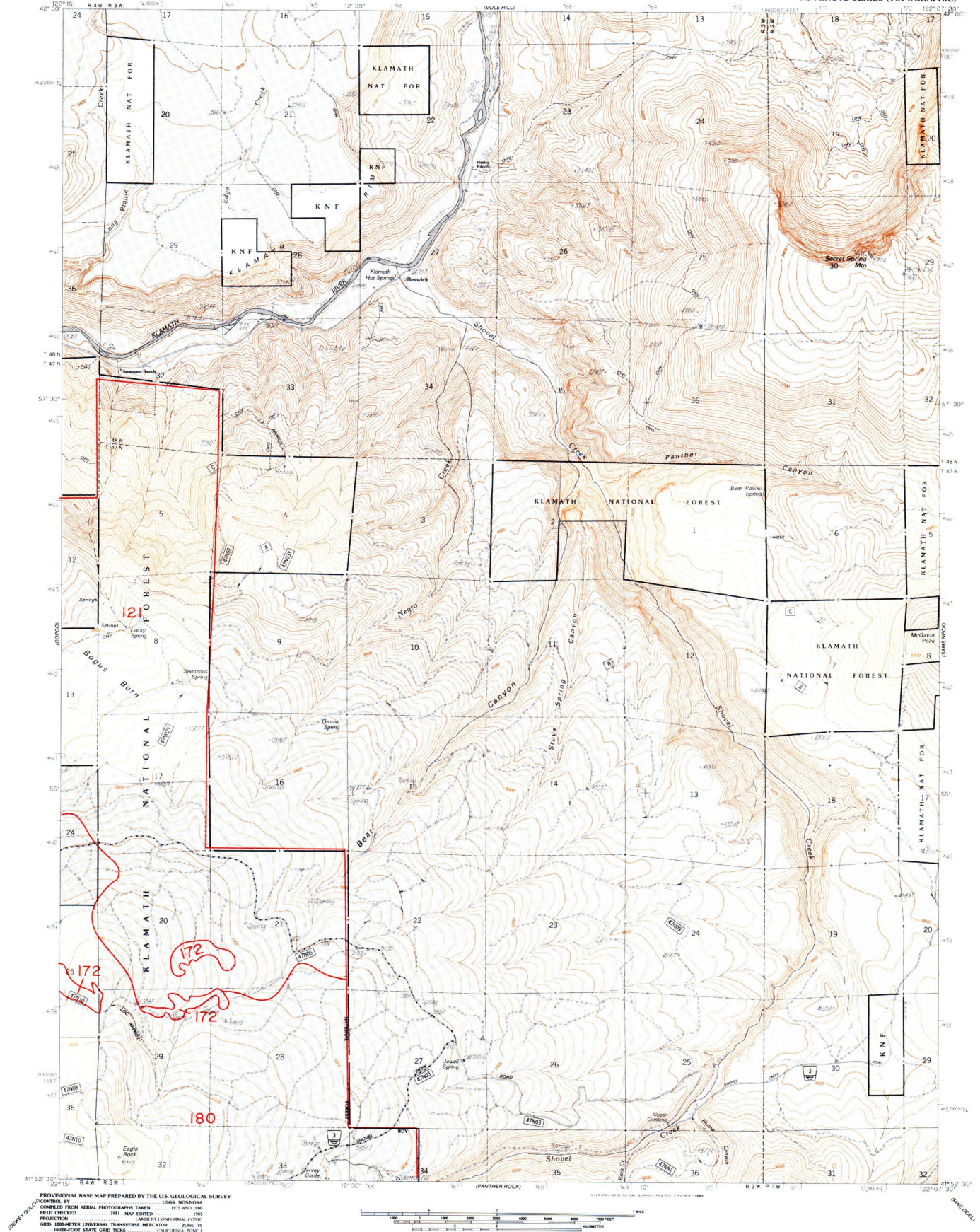
721-4
REVISED 1992

ATTN: Road ticks indicate change between portions
photographed and portions not visible on the aerial photography.
Portions not visible will be labeled "LOCATION APPROXIMATE."

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

SECRET SPRING MTN. QUADRANGLE
CALIFORNIA—SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN 1963, 1973 AND 1980
FIELD CHECKED 1981, 1984, 1985
MODIFICATION TO THE USGS PROVISIONAL BASE MAP BY THE
GEOLOGICAL SURVEY CENTER FROM 1989 AERIAL
PHOTOGRAPHS AND 1990 CORRECTION GUIDES FURNISHED BY
THE PACIFIC SOUTHWEST REGION
LANDOWNER REVISED ACCORDING TO ADDITIONAL FOREST SERVICE

VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM: 1983 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
(1/4 inch north, 3/4 inch east).
Modification to the USGS provisional base map by the
Geometric Service Center from 1989 aerial
photography and 1990 correction guides furnished by
the Pacific Southwest Region
Landowner revised according to additional Forest Service



TOPOGRAPHIC AND SECTION LINE CLASSIFICATION
— National Forest Boundary
— Non-National Forest System Land
— Surveyed, Location Reliable
— Surveyed, Location Approximate
— Surveyed, Location Questionable
— Unsurveyed
— Locked Gate

CONTOUR INTERVAL 40 FEET
— Primary Highway
— Secondary Highway
— Improved Road, Paved
— Improved Road, Gravel
— Unimproved Road, Native Surface
(includes 4WD not maintained for
passenger cars)
— Unimproved Road
— Trail

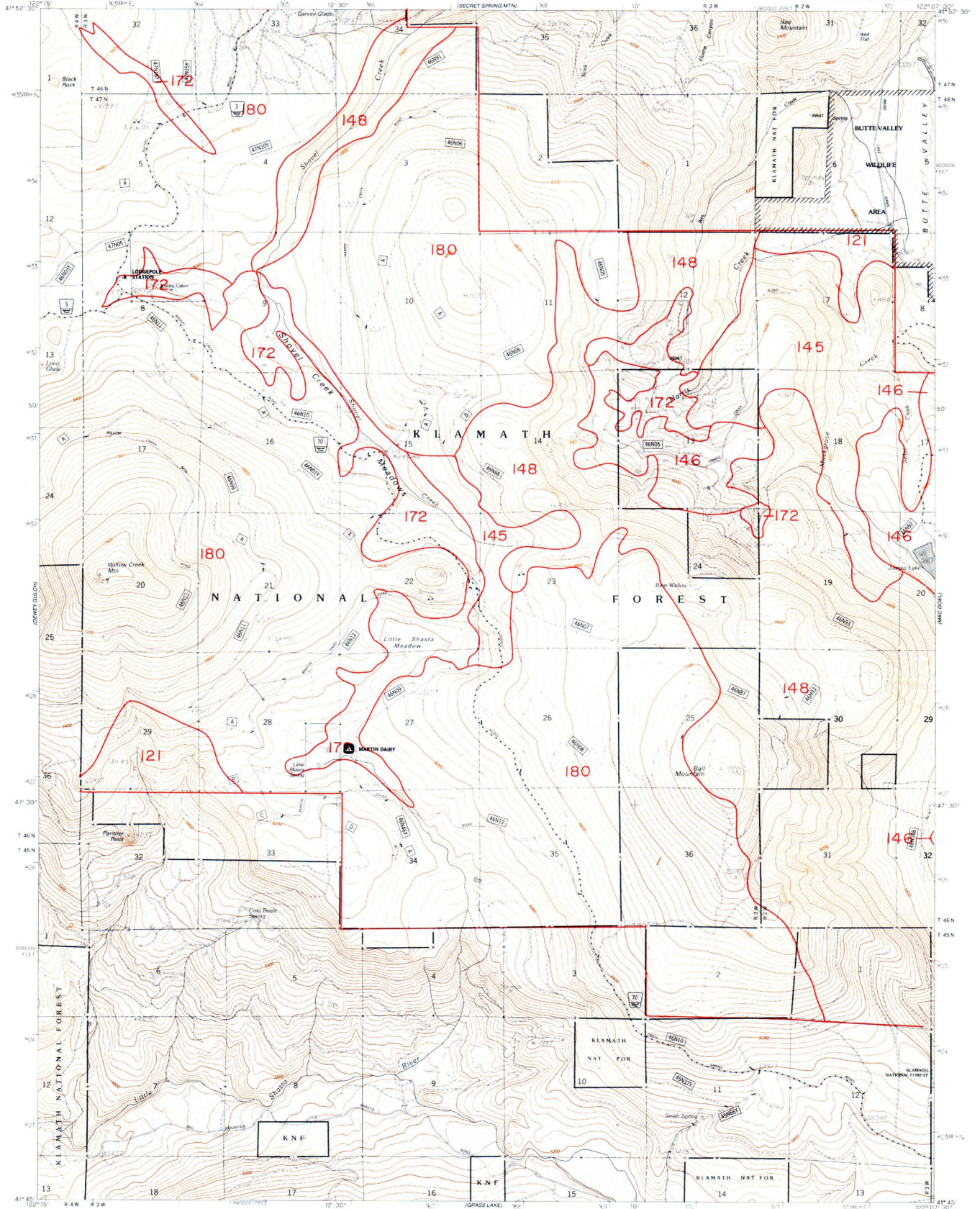
ROUTE MARKERS
— Interstate
— U.S.
— State
— County
— National Forest, Well Maintained
for Passenger Cars
— National Forest, Maintained
for Passenger Cars
— National Forest, Not Maintained
for Passenger Cars
— National Forest Trail

730.4	730.3	730.2
731.1	731.0	730.9
732.4	732.3	732.2

SECRET SPRING MTN., CALIF.
PROVISIONAL EDITION 1985
N4152.5-W12207.5/7.5
732.2
REVISED 1992

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

PANTHER ROCK QUADRANGLE
CALIFORNIA—SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY

CONTROL BY	USGS, NOS/NOAA
CORRECTED FROM AERIAL PHOTOGRAPHS TAKEN	1980
FIELD CHECKED	1981 MAP EDITED
PROJECTION	LAMBERT CONFORMAL CONIC
GRID	100-METER SURFACE TRANSVERSE MERCATOR
100-METER SURFACE TRANSVERSE MERCATOR	ZONE 10
100-METER SURFACE TRANSVERSE MERCATOR	100-METER SURFACE TRANSVERSE MERCATOR

VERTICAL DATUM: NATIONAL GEODEIC VERICAL DATUM OF 1929
HORIZONTAL DATUM: 1983 NORTH AMERICAN DATUM OF 1983
To provide the user with a more accurate map, the American Datum of 1983, the most precise projection lines as shown by dashed corner ticks (19 meters north / 94 meters east).

Modification to the USGS provisional base map by the Geomatics Service Center from 1989 aerial photography and 1990 collection of additional forest data by the Pacific Southwest Region

Landnet revised according to guides Forest Service evidence

0° 32'
9 MILS






UTM GRID
MAGNET
DECLIN

National Forest Boundary
Non-National Forest System Land as of 1992

TOWNSHIP AND SECTION LINE CLASSIFICATION

Surveyed, Location Reliable
Surveyed, Location Approximate
Surveyed, Location Questionable
Unsurveyed
Locked Gate

CONTOUR INTERVAL 40 FEET

 Primary Highway
 Secondary Highway
 Improved Road, Paved
 Improved Road, Gravel
 Unimproved Road, Native Surface (includes 4WD/not maintained for passenger cars)
 Unimproved Road
 Trail

ROUTE MARKERS

-  National Forest, Well Maintained for Passenger Cars
-  National Forest, Maintained for Passenger Cars
-  National Forest, Not Maintained for Passenger Cars
-  National Forest Trail

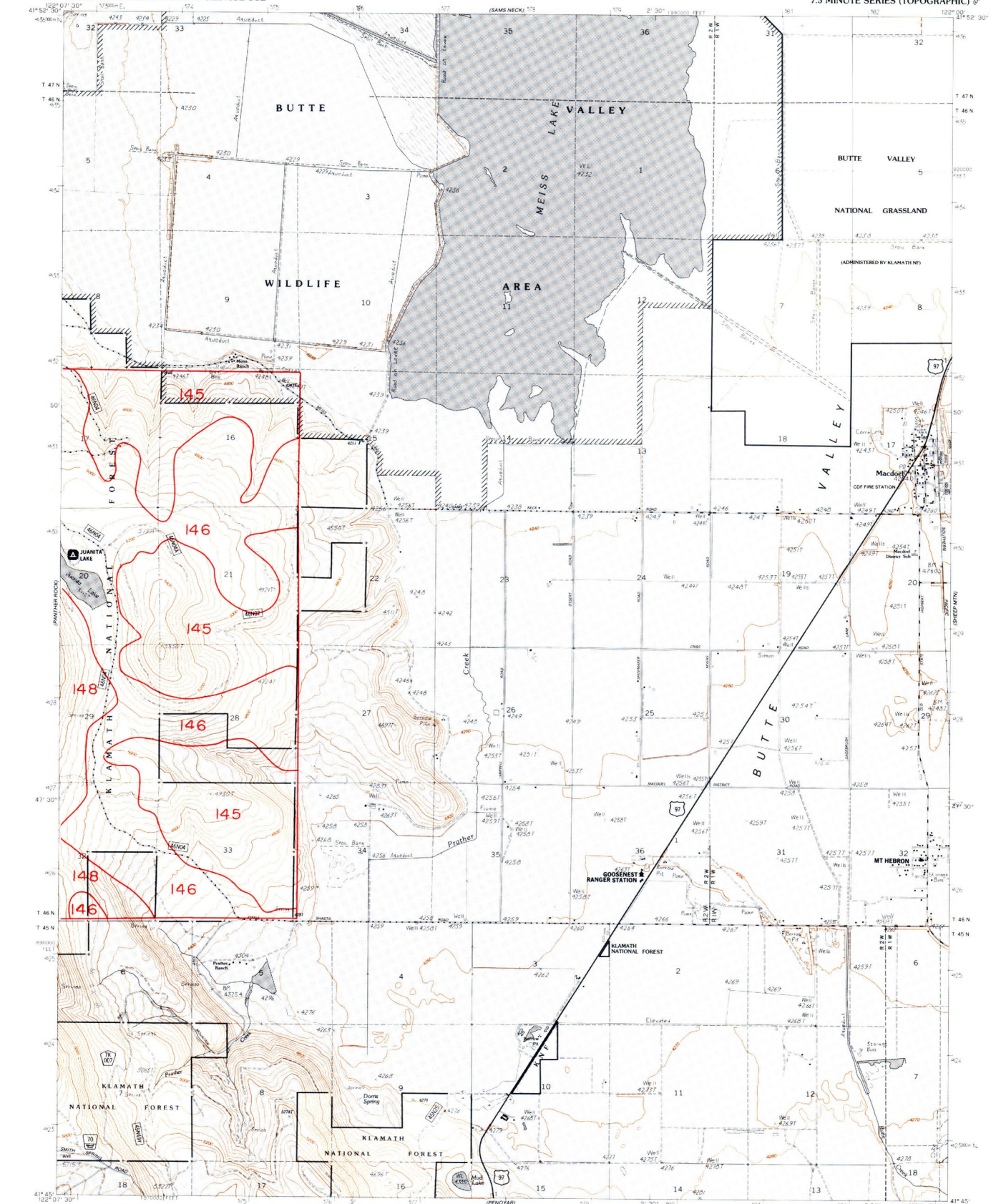
733-1	732-2	732-1
733-4	732-3	732-4
716-1	715-2	715-1

PANTHER ROCK, CALIF.
PROVISIONAL EDITION 1986
N4145—W12207.5/7.5
732-3
REVISED 1992

Klamath National Forest Order 3 Soil Survey 1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

MACDOEL QUADRANGLE
CALIFORNIA-SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC) (CONTINUED)

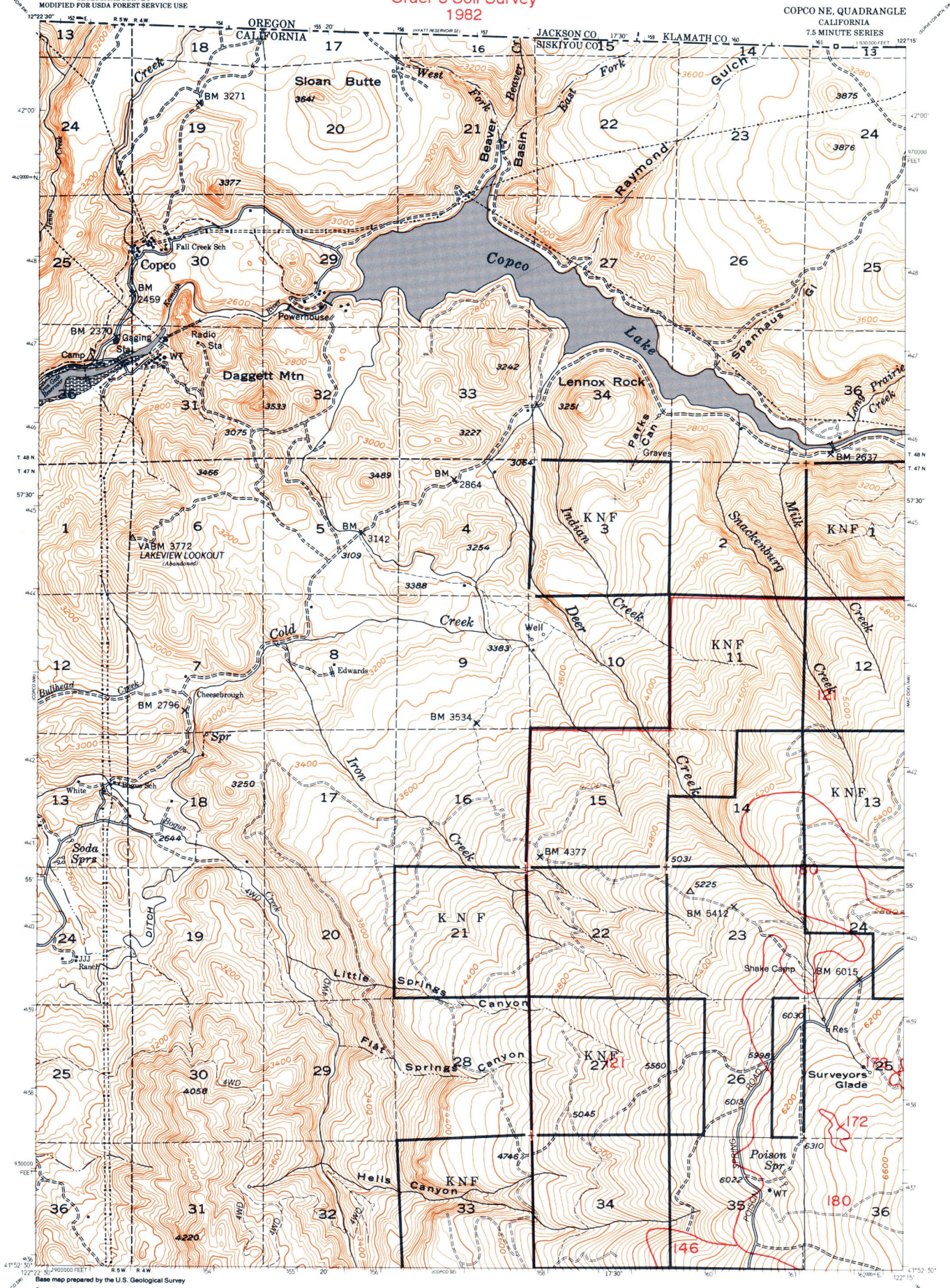


PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 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2784, 2785, 2786, 2787, 2788, 2789, 2790, 2791, 2792, 2793, 2794, 2795, 2796, 2797, 2798, 2799, 2800, 2801, 2802, 2803, 2804, 2805, 2806, 2807, 2808, 2809, 2810, 2811, 2812, 2813, 2814, 2815, 2816, 2817, 2818, 2819, 2820, 2821, 2822, 2823, 2824, 2825, 2826, 2827, 2828, 2829, 2830, 2831, 2832, 2833, 2834, 2835, 2836, 2837, 2838, 2839, 2840, 2841, 2842, 2843, 2844, 2845, 2846, 2847, 2848, 2849, 2850, 2851, 2852, 2853, 2854, 2855, 2856, 2857, 2858, 2859, 2860, 2861, 2862, 2863, 2864, 2865, 2866, 2867, 2868, 2869, 2870, 2871, 2872, 2873, 2874, 2875, 2876, 2877, 2878, 2879, 2880, 2881, 2882, 2883, 2884, 2885, 2886, 2887, 2888, 2889, 2890, 2891, 2892, 2893, 2894, 2895, 2896, 2897, 2898, 2899, 2900, 2901, 2902, 2903, 2904, 2905, 2906, 2907, 2908, 2909, 2910, 2911, 2912, 2913, 2914, 2915, 2916, 2917, 2918, 2919, 2920, 2921, 2922, 2923, 2924, 2925, 2926, 2927, 2928, 2929, 2930, 2931, 2932, 2933, 2934, 2935, 2936, 2937, 2938, 2939, 2940, 2941, 2942, 2943, 2944, 2945, 2946, 2947, 2948, 2949, 2950, 2951, 2952, 2953, 2954, 2955, 2956, 2957, 2958, 2959, 2960, 2961, 2

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

COPCO NE, QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES



Base map prepared by the U.S. Geological Survey
Control by USGS and USC&GS

Topography by photogrammetric methods from aerial
photographs taken 1961. Field check 1964

Polyconic projection 1927 North American datum
10,000-foot grid based on California coordinate system,
zone 10, shown in blue

1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue

INTERIM EDITION

Modification to USGS base map prepared by the
Geomatics Service Center from 1982 aerial photography
and 1983 correction guides furnished by the Pacific Southwest
Region

Landnet revised according to additional Forest
Service evidence

UTM GRID AND 1984 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

LEGEND

National Forest Boundary
Alienated Land within the National Forest Boundary

TOWNSHIP AND SECTION LINE CLASSIFICATION

Surveyed, Location Reliable
Surveyed, Location Approximate
Unsurveyed, Protraction

Primary Highway
Secondary Highway
Improved Light Duty
Unimproved Dirt
Trail
Locked Gate
Road, Location Approximate

U.S. Highway
State Highway
County Road
Forest Highway
Forest Trail

Trail, Location Approximate

CLAMATH NATIONAL FOREST
QUADRANGLE LOCATION DIAGRAM

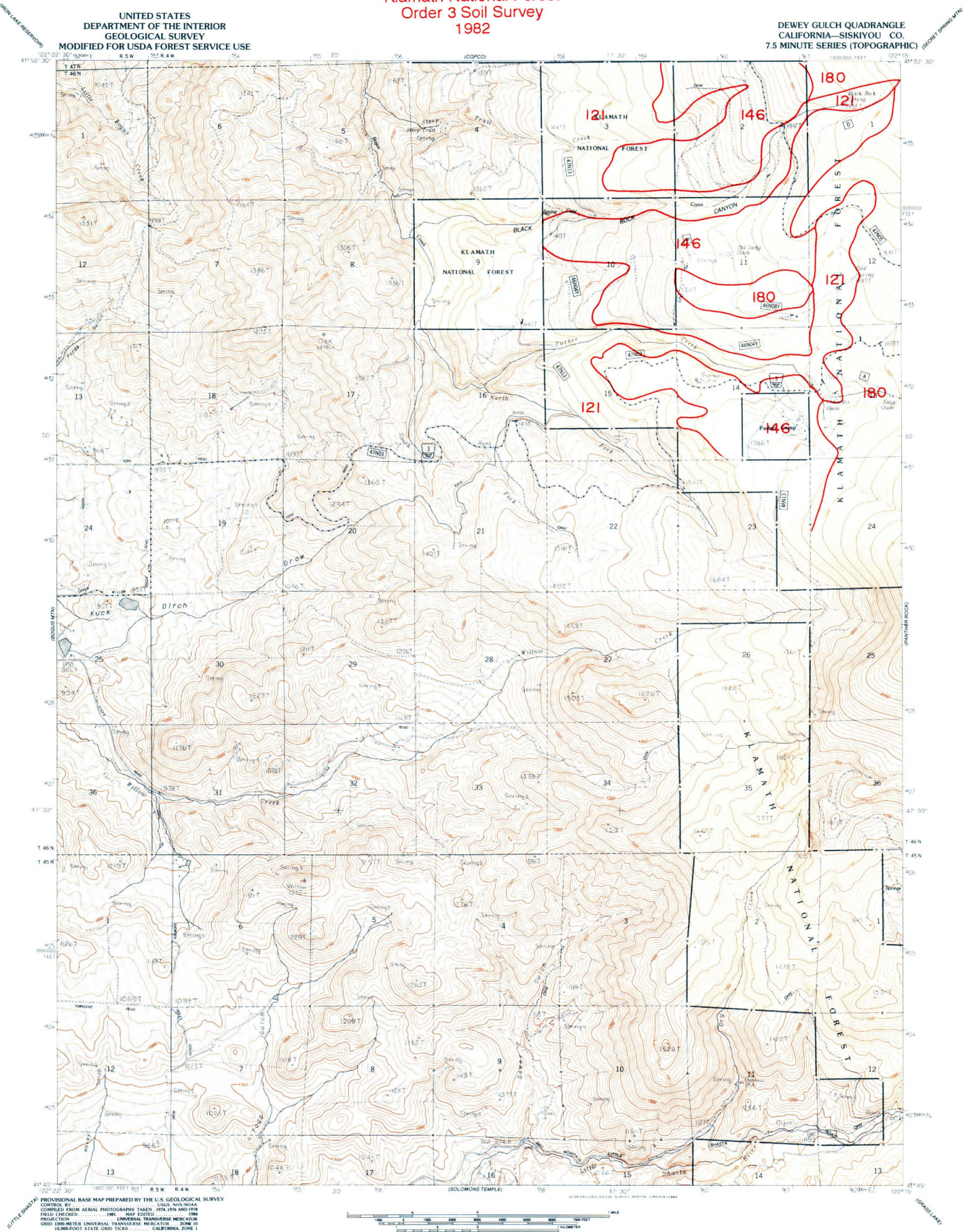
COPCO NE, CALIF.
N4152.5-W12215.7.5
REVISED 1983

733-1C

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

DEWEY GULCH QUADRANGLE
CALIFORNIA—SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY: U.S.G.S. PHOTOGRAPHY CENTER, WASHINGTON, D.C.
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN: 1974-1979 AND 1979
FIELD CHECKED: 1981. MAP EXTENT: 1981. MAP DATE: 1981.
PROJECTION: UTM. DATUM: NAD 83. ZONE: 18N.
GRID: 100-METER UNIVERSAL TRANSVERSE MERCATOR. ZONE 18
18,000-FOOT STATE GRID TICS. CALIFORNIA ZONE 1

VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM: 1983 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
(19 meters north / 94 meters east).
Modification to the USGS provisional base map by the
Geometric Service Center from 1989 aerial
photography and 1990 correction guides furnished by
the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence

UTM GRID AND 1982
MAGNETIC NORTH
DECLINATION AT
CENTER OF SHEET

Legend:

- National Forest Boundary
- Non-National Forest System Land as of 1992
- TOWNSHIP AND SECTION LINE CLASSIFICATION
- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Surveyed, Location Questionable
- Unsurveyed
- Locked Gate

CONTOUR INTERVAL 10 METERS

Primary Highway
Secondary Highway
Improved Road, Paved
Improved Road, Gravel
Unimproved Road, Native Surface (includes 4WD not maintained for passenger cars)
Unimproved Road
Trail

ROUTE MARKERS

Interstate
U.S.
State
County
National Forest, Well Maintained for Passenger Cars
National Forest, Maintained for Passenger Cars
National Forest, Not Maintained for Passenger Cars
National Forest Trail

732.2	733.1	732.2
733.3	733.4	732.4
716.2	716.1	715.2

DEWEY GULCH, CALIF.
PROVISIONAL EDITION 1984

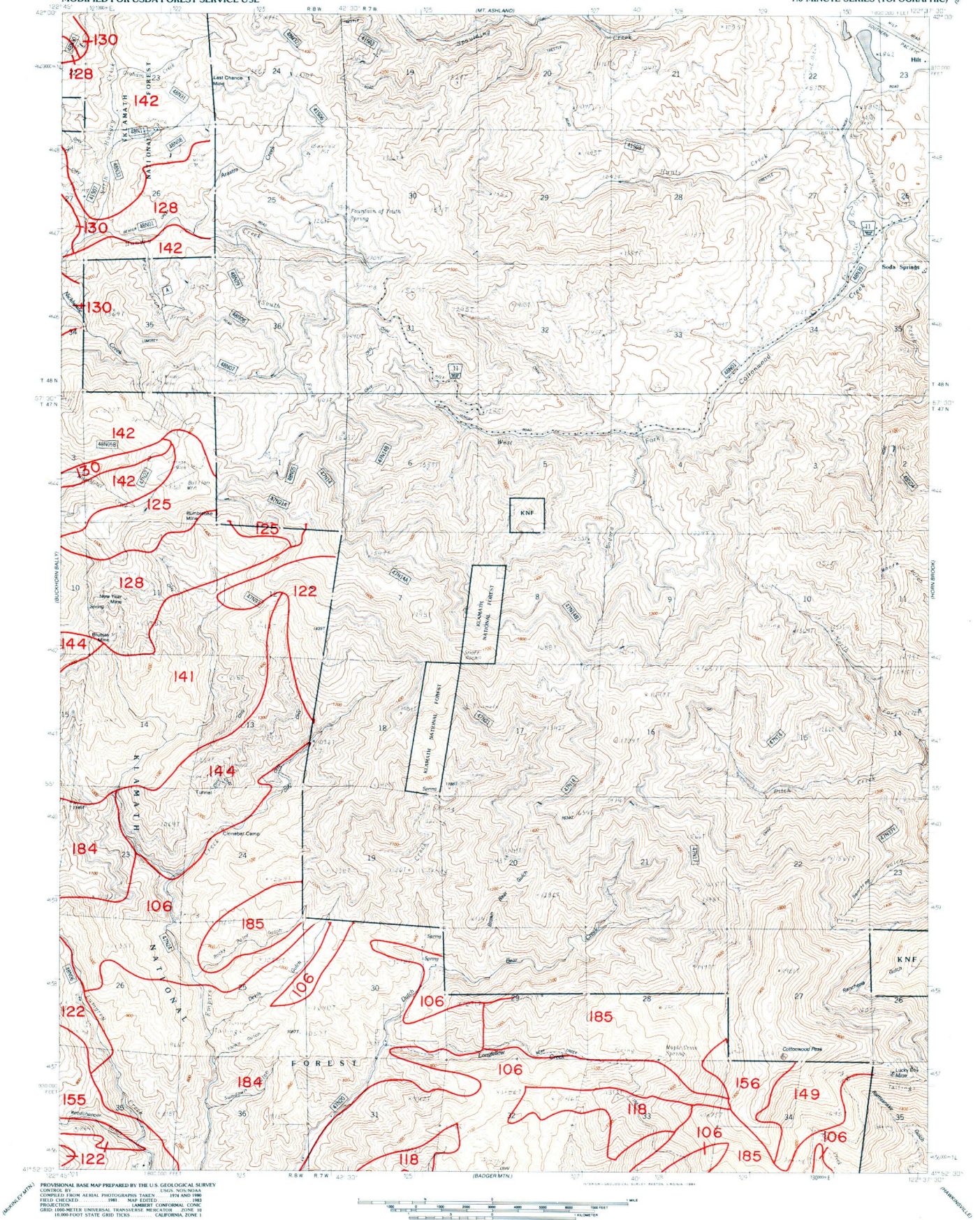
N4145-W12215/7.5

733-4

REVISED 1992

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

COTTONWOOD PEAK QUADRANGLE
CALIFORNIA—SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY: CLOS, NONGDA
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN IN 1974 AND 1980
PROJECTION: UTM, METER, NORTH AMERICAN DATUM OF 1983
GRID: 18° 00' 00" NORTHERN LATITUDE, 120° 00' 00" WESTERN LONGITUDE
10,000 FOOT STATE GRID TICS: CALIFORNIA, ZONE 1


VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM: 1927 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
(19 meters north/95 meters east)


Modification to the USGS provisional base map by the
Geomatics Service Center from 1989 aerial
photography and 1990 correction guidelines furnished by
the Pacific Southwest Region

Landnet revised according to additional Federal Service evidence


CONTOUR INTERVAL 20 METERS

Legend

 National Forest Boundary


 Non National Forest System Land as of 1992


TOWNSHIP AND SECTION LINE CLASSIFICATION



 Surveyed, Location Reliable

 Surveyed, Location Approximate

 Surveyed, Location Questionable

 Unsurveyed

 Locked Gate

 Primary Highway
 Secondary Highway
 Improved Road, Paved
 Improved Road, Gravel
 Unimproved Road, Native Use (includes 4WD/not maintain passenger cars)
 Unimproved Road
 Trail

ROUTE MARKER

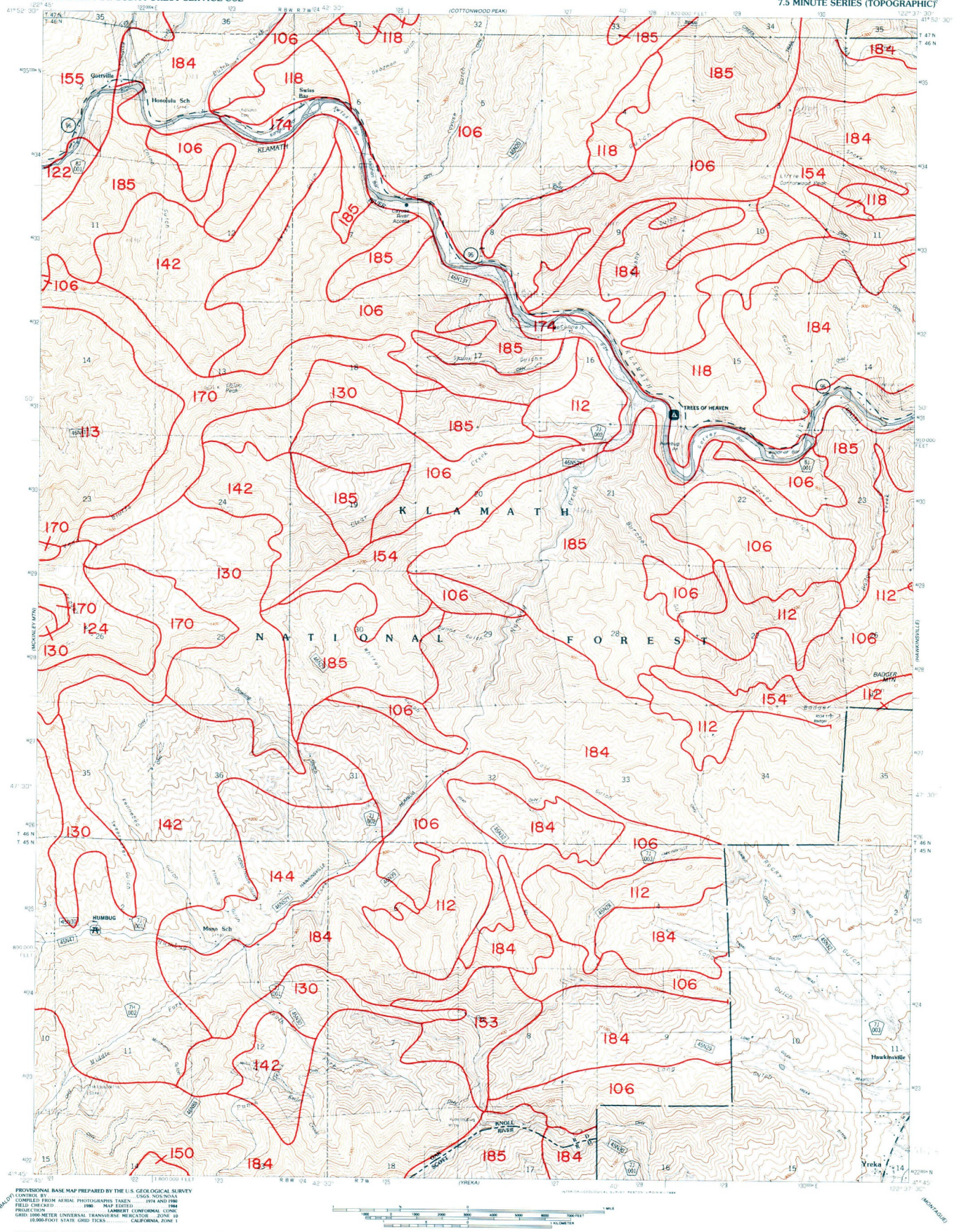
- National Forest, Well Maintained for Passenger Cars
- National Forest, Maintained for Passenger Cars
- National Forest, Not Maintained for Passenger Cars
- National Forest Trail

752-4	751-3	751-4
735-1	734-2	734-3
735-4	734-3	734-4

COTTONWOOD PEAK, CALIF.
PROVISIONAL EDITION 1983
N4152.5—W12237.5/7.5
734-2

REVISED 1992

Klamath National Forest
Order 3 Soil Survey
1982



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTOUR INTERVAL 20 METERS
TOPOGRAPHIC DATA FROM AERIAL PHOTOGRAPHS TAKEN 1974 AND 1980
FIELD CHECKED 1980 MAP EDITED 1984
LAMBERT CONFORMAL CONIC
UNIT: 1983 METER UNIVERSAL TRANSVERSE MERCATOR ZONE 10
FEDERAL STATE GRID TICS CALIFORNIA ZONE 1

VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM: 1983 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
19 meters north / 95 meters east.
Modification to the USGS provisional base map by the
Geometric Service Center from 1980 aerial
photography and 1990 correction guides furnished by
the Pacific Southwest Region
Landsat revised according to additional Forest Service evidence



TOWNSHIP AND SECTION LINE CLASSIFICATION
Surveyed, Location Reliable
Surveyed, Location Approximate
Surveyed, Location Questionable
Unsurveyed
Locked Gate

ROUTE MARKERS
Primary Highway
Secondary Highway
Improved Road: Paved
Improved Road: Gravel
Unimproved Road: Native Surface (includes 4WD not maintained for passenger cars)
Unimproved Road
Trail

Interstate
U.S.
State
County

National Forest Boundary
National Forest, Well Maintained for Passenger Cars
National Forest, Maintained for Passenger Cars
National Forest, Not Maintained for Passenger Cars
National Forest Trail

730.1	734.2	734.1
730.4	734.3	734.4
731.1	734.2	734.1

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

HAWKINSVILLE QUADRANGLE
CALIFORNIA—SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY U.S.G.S. NAD 83
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN 1974-80
FIELD CHECKED 1980 MAP SKELETON 1982
PROJECTION LAMBERT CONFORMAL ZONE 10
GRID 1000-METER UNIVERSAL TRANSVERSE MERCATOR ZONE 10
10000-FOOT STATE GRID TICS CALIFORNIA, ZONE 1

VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM: 1983 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
(19 meters north/94 meters east)
Modification to the USGS provisional base map by the
Geomatics Service Center from 1989 aerial
photography and 1990 correction guides furnished by
the Pacific Southwest Region
Landmark revised according to additional Forest Service evidence

UTM GRID AND 1982
MAGNETIC NORTH
DECLINATION AT
CENTER OF SHEET

— National Forest Boundary
— Non-National Forest System Land
as of 1992

TOWNSHIP AND SECTION LINE CLASSIFICATION

— Surveyed, Location Reliable
— Surveyed, Location Approximate
— Surveyed, Location Questionable
— Unsurveyed
— Locked Gate

— Primary Highway
— Secondary Highway
— Improved Road, Paved
— Improved Road, Gravel
— Unimproved Road, Native Surface
(includes 4WD not maintained for
passenger cars)
— Unimproved Road
— Trail

ATTN: Road ticks indicate change between portions
photo identified and portions not visible on the aerial photography
Portions not visible will be labeled LOCATION APPROXIMATE

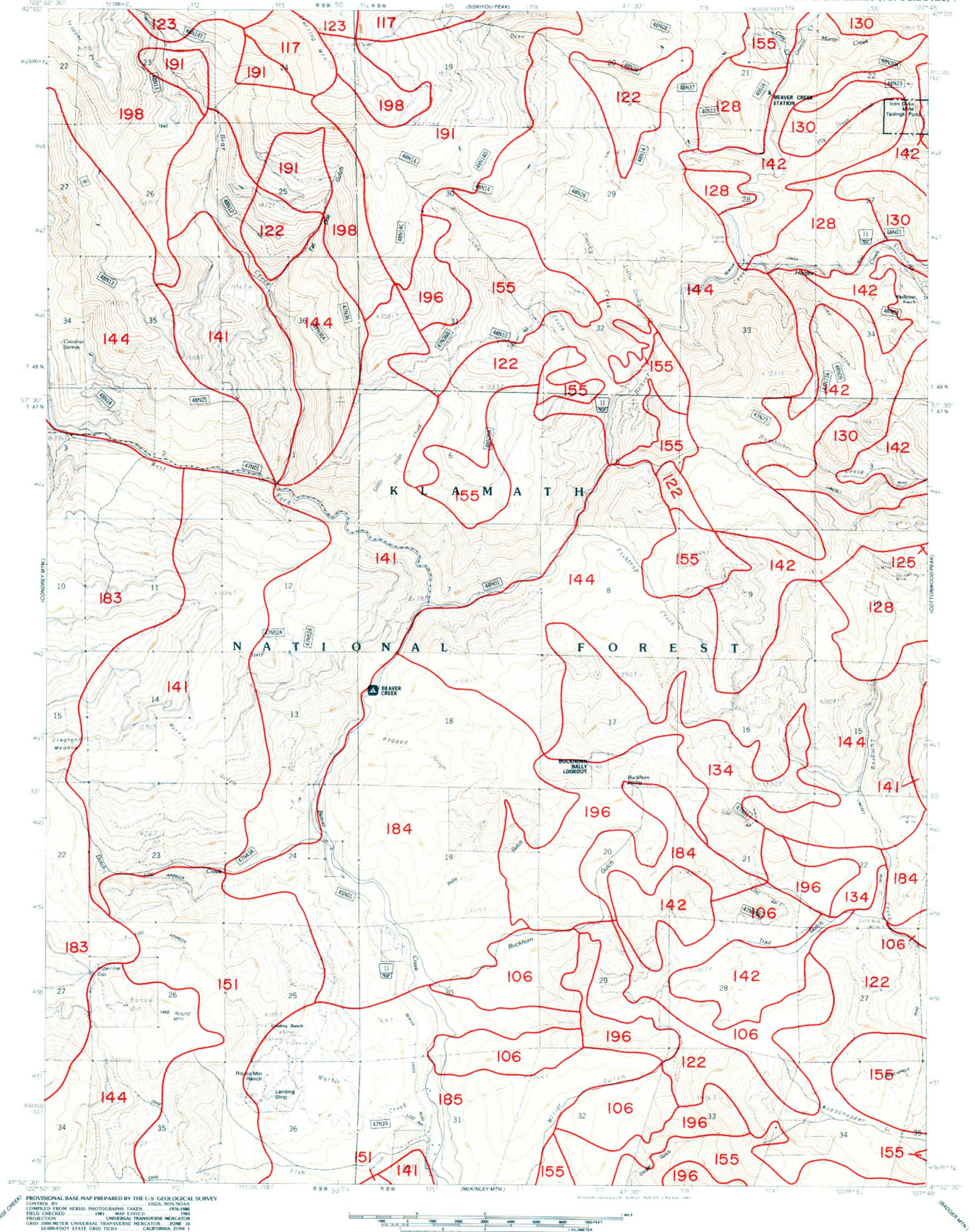
ROUTE MARKERS

— Interstate
— U.S.
— State
— County

734.2 734.1 733.2
734.3 734.4 733.3
717.3 717.1 716.2

HAWKINSVILLE, CALIF.
PROVISIONAL EDITION 1983
N4145-W12230/7.5
734-4
REVISED 1992

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE



VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM: 1927 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
(20 meters north/95 meters east)
Modification to the USGS provisional base map by the
Geomatronics Service Center from 1989 aerial
photography and 1990 correction guides furnished by
the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence

TOWNSHIP AND SECTION LINE CLASSIFICATION

=====	Surveyed, Location Reliable
-----	Surveyed, Location Approximate
- - - - -	Surveyed, Location Questionable
.....	Unsurveyed

CONTOUR INTERVAL 20 METERS

- Primary Highway
- Secondary Highway
- Improved Road, Paved
- Improved Road, Gravel
- Unimproved Road, Native Surface (includes 4WD/ not maintained for passenger cars)
- Unimproved Road
- Trail

ROUTE MARKERS

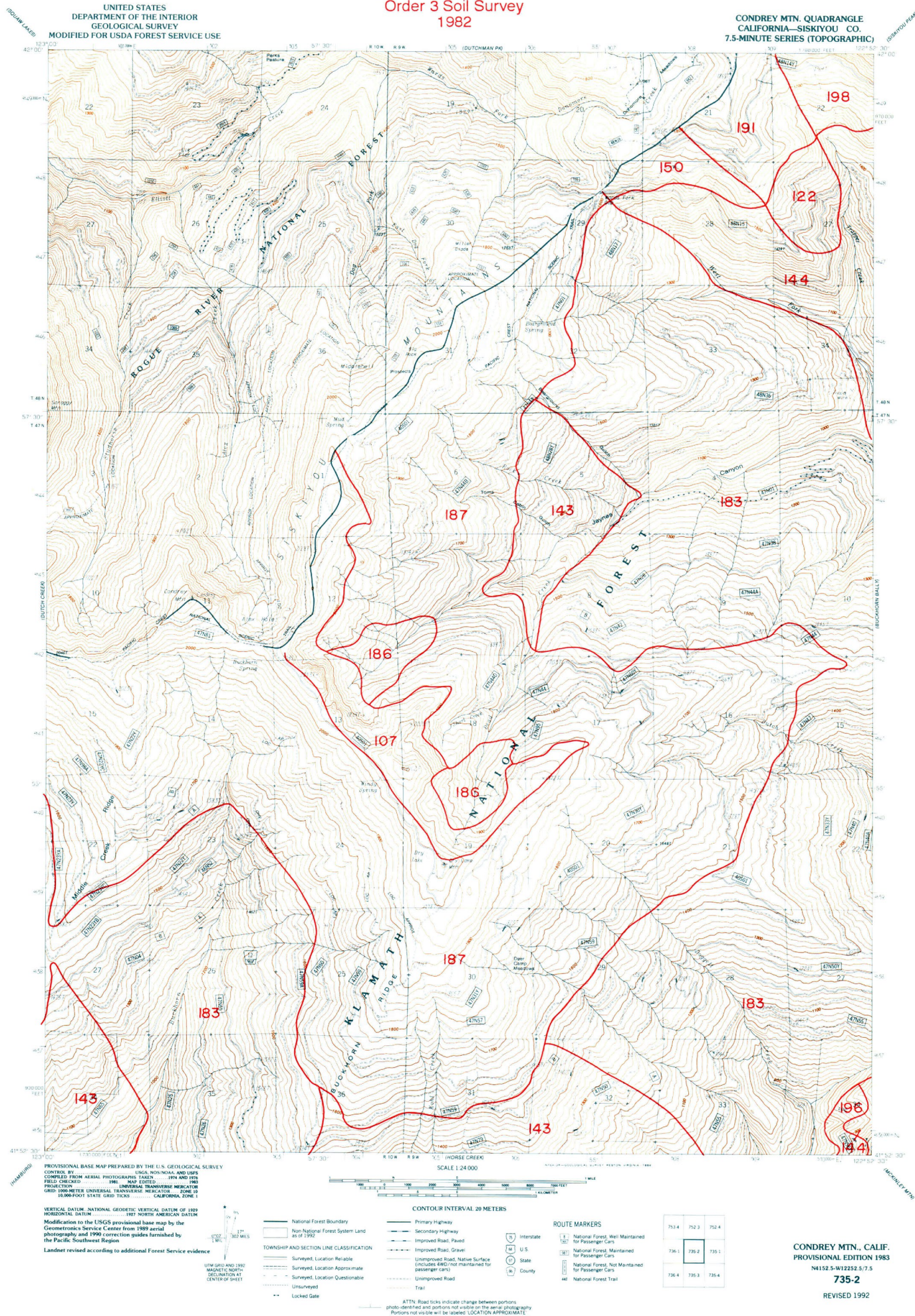
	National Forest, Well Maintained for Passenger Cars
	National Forest, Maintained for Passenger Cars
	National Forest, Not Maintained for Passenger Cars
	National Forest Trail

BUCKHORN BALLY, CALIF.
PROVISIONAL EDITION 1983
N4152.5—W12245/7.5
735-1
REVISED 1992

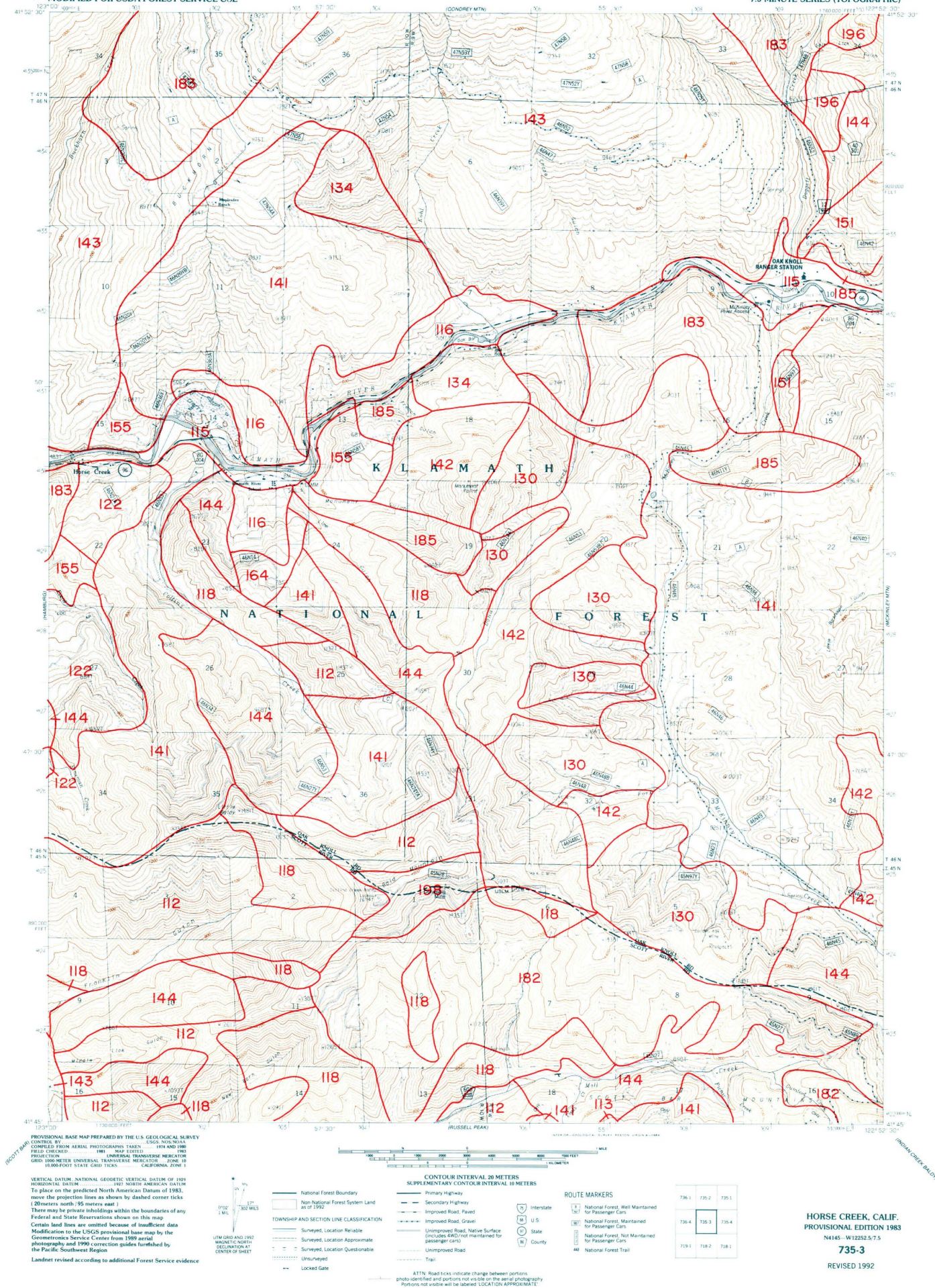
ATTN: Road ticks indicate change between portions
photo-identified and portions not visible on the aerial photography
Portions not visible will be labeled 'LOCATION APPROXIMATE'

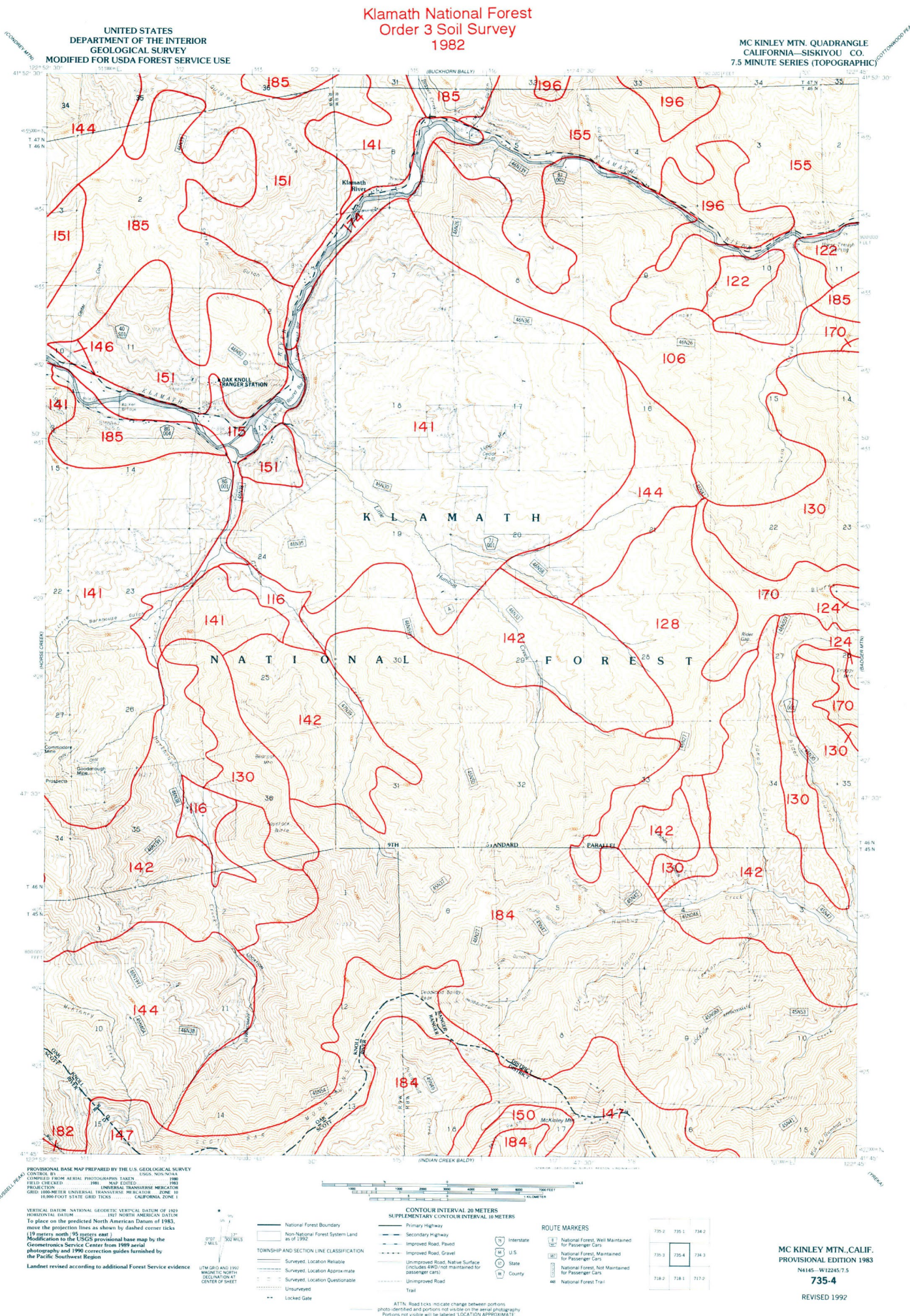
Klamath National Forest
Order 3 Soil Survey
1982

CONDREY MTN. QUADRANGLE
CALIFORNIA—SISKIYOU CO.
7.5-MINUTE SERIES (TOPOGRAPHIC)



HORSE CREEK QUADRANGLE
CALIFORNIA—SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)





PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY COMPILED FROM AERIAL PHOTOGRAPHS TAKEN 1986
FIELD CHECKED 1986
MODIFICATION TO THE USGS PROVISIONAL BASE MAP BY THE
GEOLOGICAL SURVEY CENTER FROM 1989 AERIAL
PHOTOGRAPHY AND 1990 CORRECTION GUIDES FURNISHED BY
THE PACIFIC SOUTHWEST REGION
Land use revised according to additional Forest Service evidence

TOWNSHIP AND SECTION LINE CLASSIFICATION
— Surveyed, Location Reliable
- - - Surveyed, Location Approximate
- - - Surveyed, Location Questionable
- - - Unsurveyed
- - - Locked Gate

CONTOUR INTERVAL 20 METERS
SUPPLEMENTARY CONTOUR INTERVAL 10 METERS
— Primary Highway
— Secondary Highway
— Improved Road, Paved
— Improved Road, Gravel
— Unimproved Road, Native Surface
(includes 400' not maintained for
passenger cars)
— Unimproved Road
— Trail

ROUTE MARKERS
— National Forest, Well Maintained
for Passenger Cars
— National Forest, Maintained
for Passenger Cars
— National Forest, Not Maintained
for Passenger Cars
— National Forest Trail

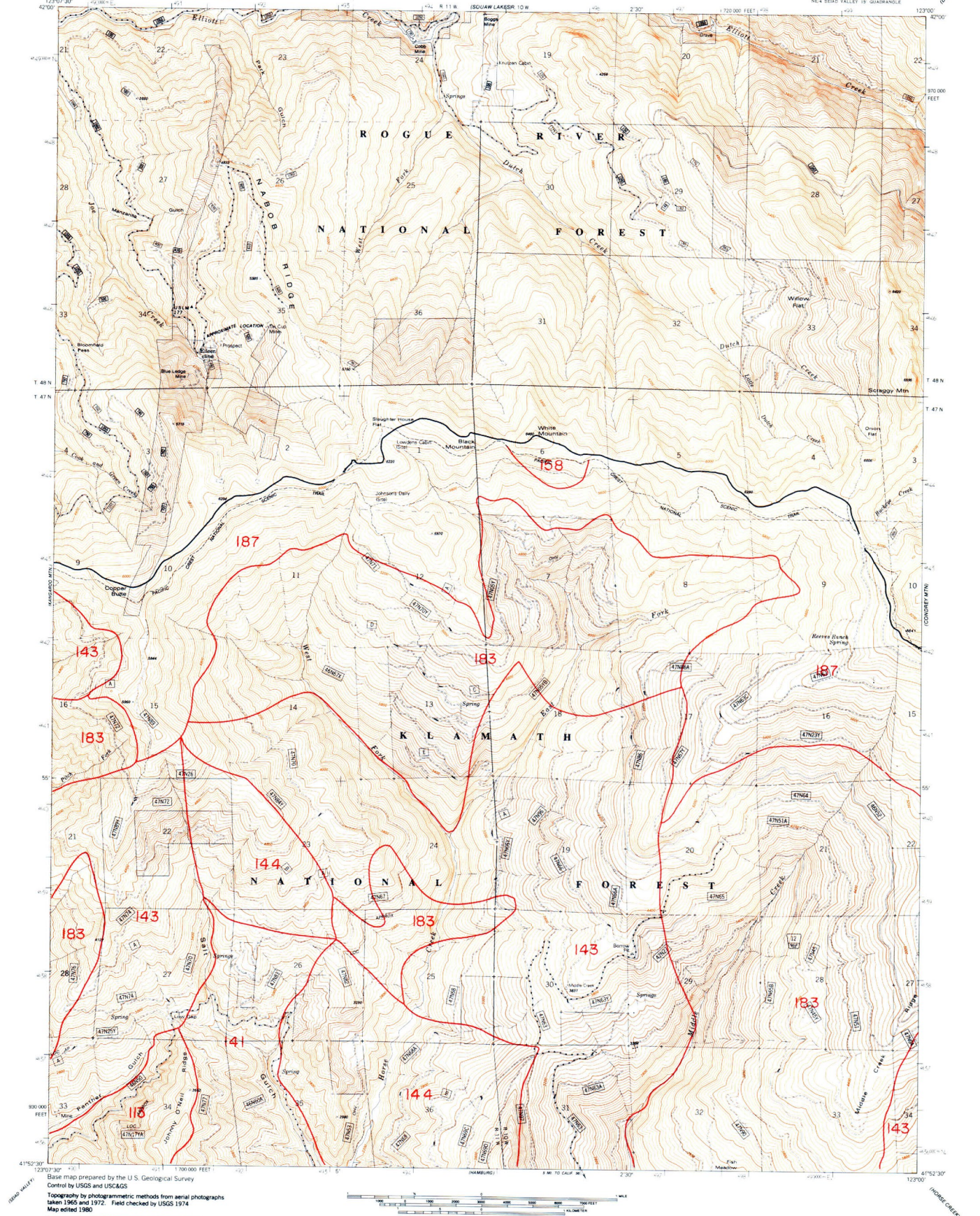
735.0	735.1	735.2
735.3	735.4	735.5
735.6	735.7	735.8

MC KINLEY MTN., CALIF.
PROVISIONAL EDITION 1983
N4145-W12245-7.5
735-4
REVISED 1992

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

DUTCH CREEK QUADRANGLE
CALIFORNIA-SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
N4152 S W12300 7.5



Base map prepared by the U.S. Geological Survey
Control by USGS and USFWS
Topography by photogrammetric methods from aerial photographs
taken 1965 and 1972. Field checked by USGS 1974
Map edited 1980
Projection and 10,000-foot grid ticks: California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid, zone 10
1927 North American datum
Modification to the USGS base map by the Geomatics
Service Center from 1989 aerial photography and 1990
correction guides furnished by the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence

UTM GRID AND 1982
MAGNETIC NORTH
DECLINATION AT
CENTER OF SHEET

1" = 360 MILES

1" = 360 KILOMETERS

TOWNSHIP AND SECTION LINE CLASSIFICATION

- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Surveyed, Location Questionable
- Unsurveyed
- Locked Gate

CONTOUR INTERVAL 80 FEET
DATUM IS MEAN SEA LEVEL

Primary Highway

Secondary Highway

Improved Road, Paved

Improved Road, Gravel

Unimproved Road, Native Surface
(includes 4WD not maintained for
passenger cars)

Unimproved Road

Trail

ATTN: Road ticks indicate change between portions
photo-identified and portions not visible on the aerial photography
Portions not visible will be labeled LOCATION APPROXIMATE.

ROUTE MARKERS

- National Forest, Well Maintained for Passenger Cars
- National Forest, Maintained for Passenger Cars
- National Forest, Not Maintained for Passenger Cars
- National Forest Trail

Interstate

U.S.

State

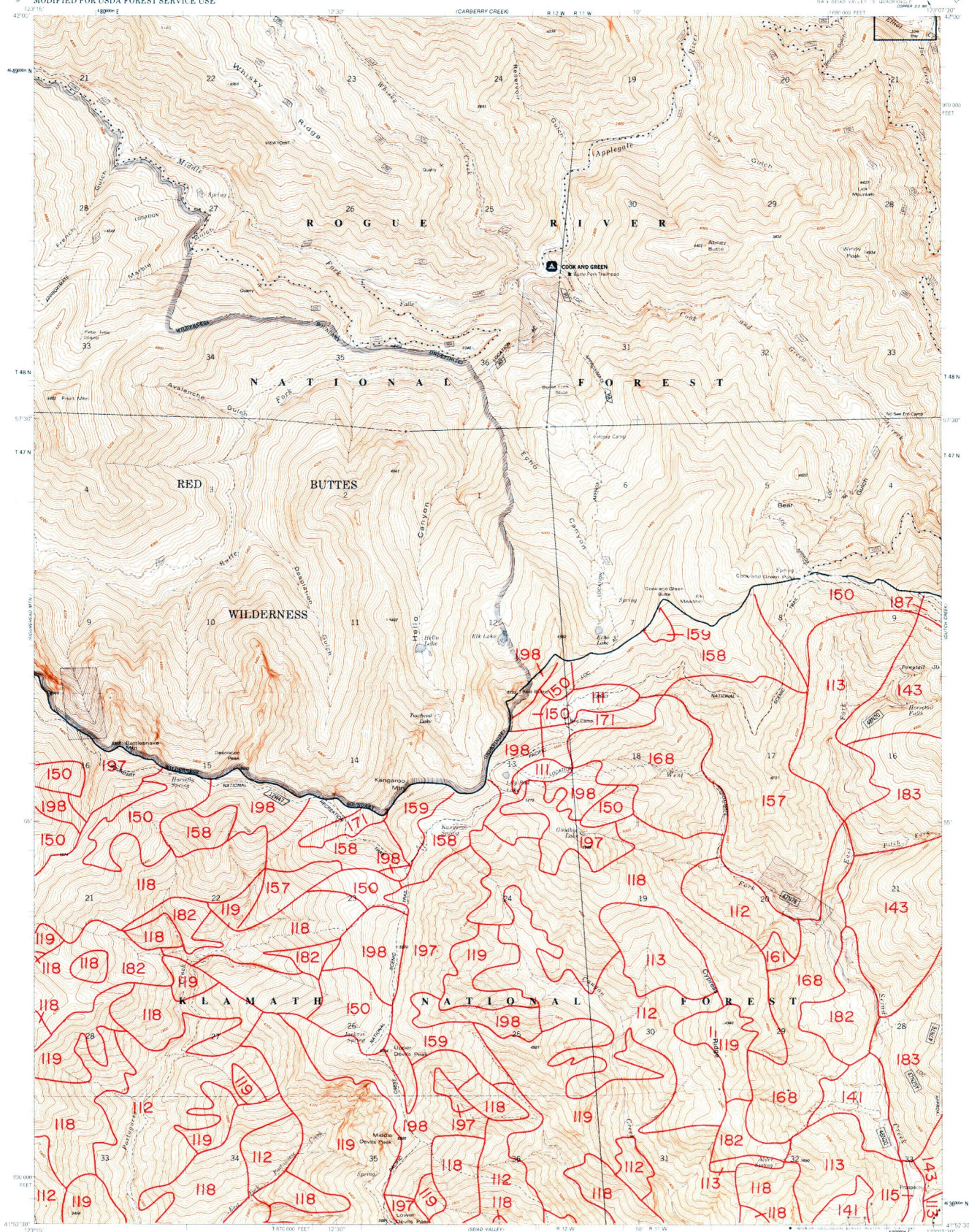
County

DUTCH CREEK, CALIF.
N4152 S W12300 7.5
1980
DMA 13071 N.E. SERIES V986
736-1
REVISED 1992

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

KANGAROO MTN. QUADRANGLE
CALIFORNIA-SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Base map prepared by the U.S. Geological Survey
Control by USGS, NOS/NOAA, and USFS
Topography by photogrammetric methods from aerial photographs
taken 1965 and 1972. Field checked by USGS 1974
Map edited 1980
Projection and 10,000-foot grid ticks: California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid, zone 10
1927 North American datum
Modification to the USGS base map by the Geomatics
Service Center from 1989 aerial photography and 1990
correction guides furnished by the Pacific Southwest Region
Landmark revised according to additional Forest Service
evidence



- TOWNSHIP AND SECTION LINE CLASSIFICATION**
- National Forest Boundary
 - - - Non-National Forest System Land
 - - - U.S.
 - - - Improved Road, Gravel
 - - - Unimproved Road, Native Surface
 - - - Unimproved Road, Not Maintained for Passenger Cars
 - - - Unimproved Road
 - - - Trail
 - - - Locked Gate

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

- ROUTE MARKERS**
- National Forest, Well Maintained for Passenger Cars
 - National Forest, Maintained for Passenger Cars
 - National Forest, Not Maintained for Passenger Cars
 - National Forest Trail

754.4	753.3	753.4
737.1	736.2	736.1
737.4	736.3	736.4

KANGAROO MTN., CALIF.
N.W. 1/4, RANGE 12, T. 48N., R. 12W.
1980
DMA 1981 1:50,000 SERIES 5885
736-2
REVISED 1992

Klamath National Forest
Order 3 Soil Survey
1982

SEIAD VALLEY QUADRANGLE
CALIFORNIA - SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
SW 4 SEIAD VALLEY 10 QUADRANGLE



Base map prepared by the U.S. Geological Survey
Control by USGS, NOS/NOAA, and USFS
Topography by photogrammetric methods from aerial
photographs taken 1972. Field checked 1974
Map edited 1980

Projection and 10,000-foot grid ticks: California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid, zone 10
1927 North American Datum

To place on the predicted North American Datum 1983
move the projection lines 20 meters north and
95 meters east as shown by dashed corner ticks

Modification to the USGS base map by the Geomatrix
Service Center from 1985 aerial photography and 1980
correction guides furnished by the Pacific Southwest Region

Landmark revised according to additional Forest Service evidence



TOWNSHIP AND SECTION LINE CLASSIFICATION

- National Forest Boundary
- Non National Forest System Land as of 1992
- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Surveyed, Location Questionable
- Unsurveyed
- Locked Gate

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

- Primary Highway
- Secondary Highway
- Improved Road, Paved
- Improved Road, Gravel
- Unimproved Road, Native Surface (includes AND not maintained for passenger cars)
- Unimproved Road
- Trail

ROUTE MARKERS

- National Forest, Well Maintained for Passenger Cars
- National Forest, Maintained for Passenger Cars
- National Forest, Not Maintained for Passenger Cars
- National Forest Trail

737.1	736.2	736.1
737.4	736.3	736.4
736.1	736.2	736.1

SEIAD VALLEY, CALIF.

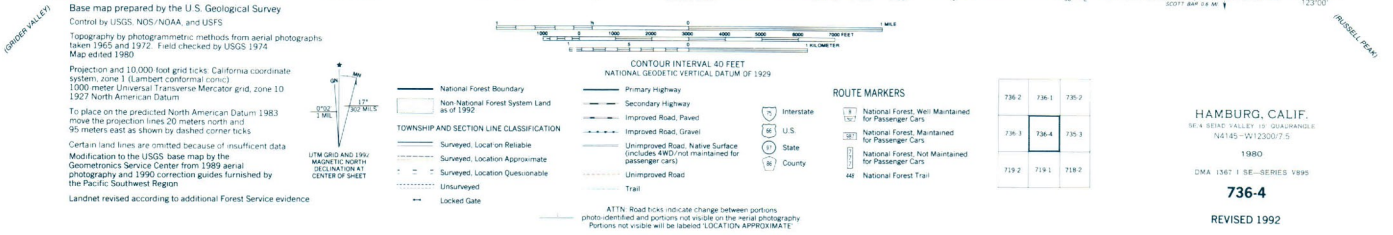
SW 4 SEIAD VALLEY 10 QUADRANGLE
NAD 83 - NAD 27 507.75

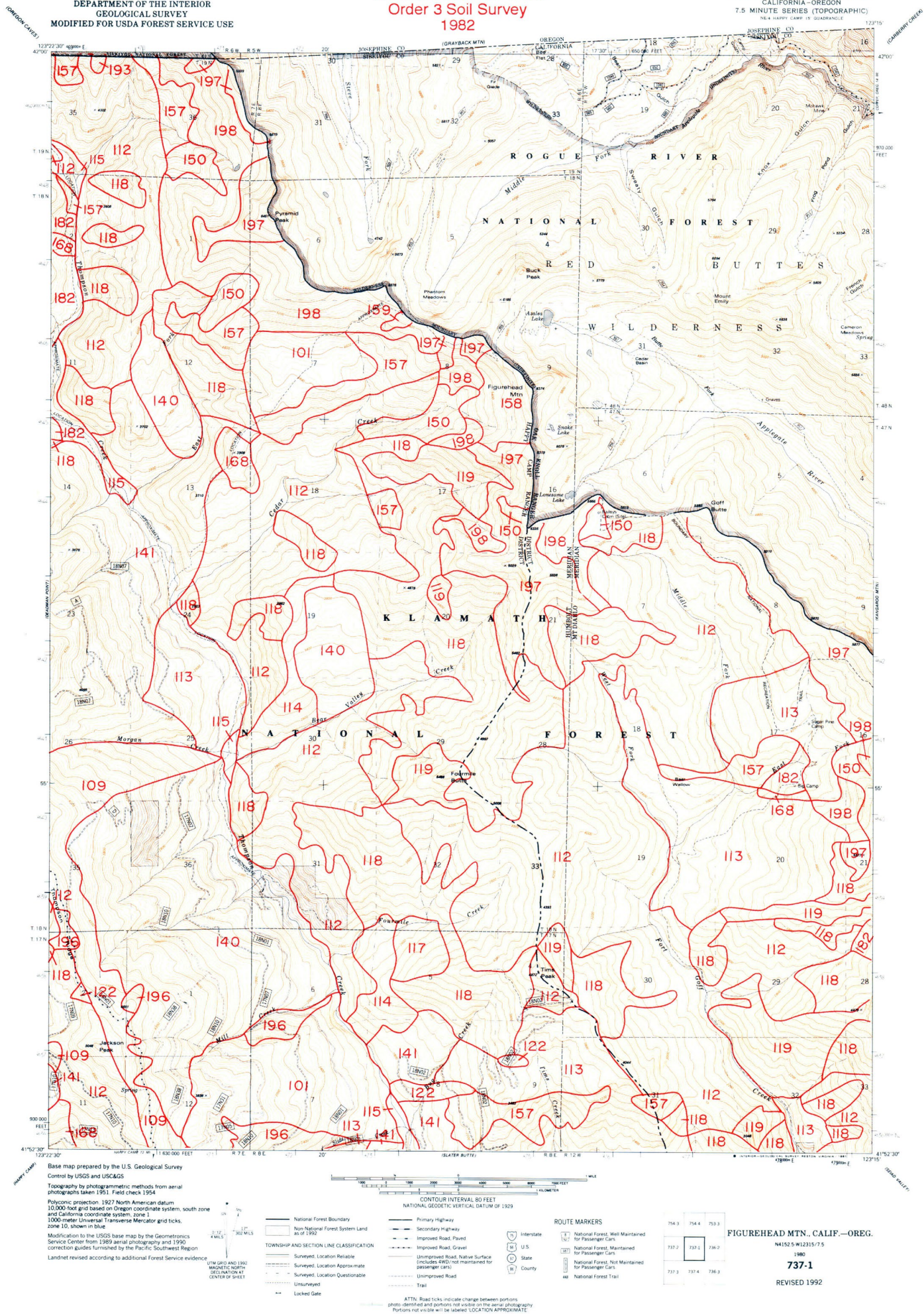
1980
DMA 1367-1 SW-SERIES 1985

736-3
REVISED 1992

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

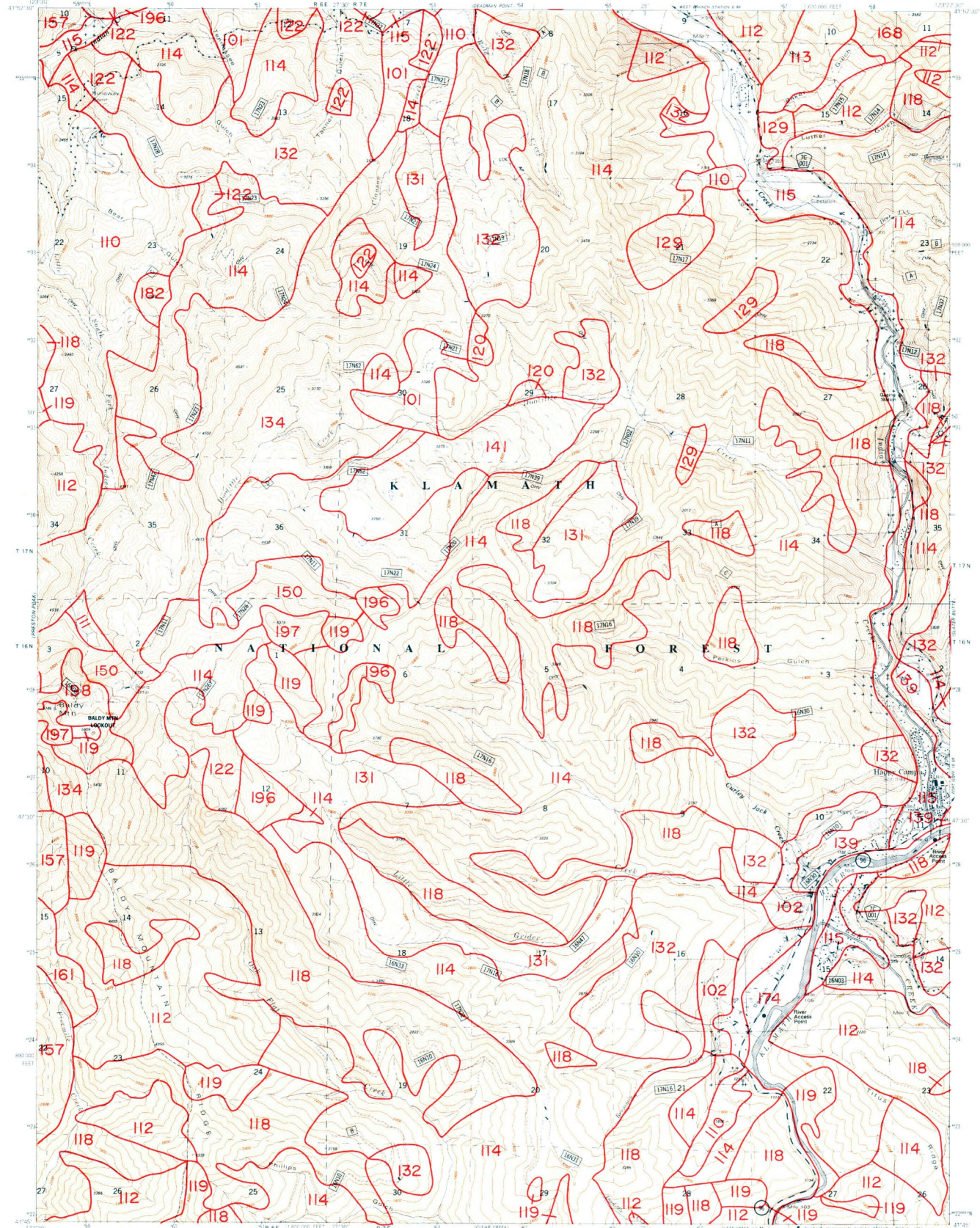
ANDREY MTN)





Klamath National Forest
Order 3 Soil Survey
1982

HAPPY CAMP QUADRANGLE
CALIFORNIA-SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
1:250,000



Base map prepared by the U.S. Geological Survey
Control by USGS, NOS/NOAA, and USFS

Topography by photogrammetric methods from aerial photographs
taken 1960 and 1972. Field checked by USGS 1974
Map edited 1980

Projection and 10,000 foot grid ticks. California coordinate
system, zone 1 (Lambert conformal conic)
1000 meter Universal Transverse Mercator grid, zone 10
1983 North American Datum

To place on the predicted North American Datum 1983
move the projection lines 20 meters north and
95 meters east as shown by dashed corner ticks

Modification to the USGS base map by the Geomorphics
Service Center from 1989 aerial photography and 1990
correction guides furnished by the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence



- TOWNSHIP AND SECTION LINE CLASSIFICATION**
- Surveyed, Location Reliable
 - Surveyed, Location Approximate
 - Surveyed, Location Questionable
 - Unsurveyed
 - Locked Gate

- CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929**
- Primary Highway
 - Secondary Highway
 - Improved Road, Paved
 - Improved Road, Gravel
 - Unimproved Road, Native Surface (includes 4WD not maintained for passenger cars)
 - Unimproved Road
 - Trail

- ROUTE MARKERS**
- National Forest, Well Maintained for Passenger Cars
 - National Forest, Maintained for Passenger Cars
 - National Forest, Not Maintained for Passenger Cars
 - National Forest Trail

738.5	737.0	737.1
738.4	737.3	737.4
721.5	720.2	720.1

HAPPY CAMP, CALIF.
U.S. GEOLOGICAL SURVEY
1:250,000
1980

Klamath National Forest Order 3 Soil Survey 1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

SLATER BUTTE QUADRANGLE
CALIFORNIA-SISKIYOU CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
64-A SLATER CAMP - 1982



Base map prepared by the U.S. Geological Survey
Control by USGS, NDS/NOAA and USFS
Topography by photogrammetric methods from aerial
photographs taken 1965 and 1972. Field checked
by USGS 1974 Map edited 1980

Projection and 10,000 foot grid ticks. California coordinate
system, zone 1 (Lambert conformal conic)
1000 meter Universal Transverse Mercator grid, zone 10
1983 North American Datum

To place on the predicted North American Datum 1983
move the projection lines 20 meters north and
96 meters east as shown by dashed corner ticks

Modification to the USGS base map by the Geomatics
Service Center from 1989 aerial photography and 1990
correction guides furnished by the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence

TOWNSHIP AND SECTION LINE CLASSIFICATION

- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Unsurveyed, Location Questionable
- Unsurveyed
- Locked Gate

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

- Primary Highway
- Secondary Highway
- Improved Road, Paved
- Improved Road, Gravel
- Unimproved Road, Native Surface (includes BRD not maintained for passenger cars)
- Unimproved Road
- Trail

ATTN: Road ticks indicate change between portions
photographed and portions not visible on the aerial photography
Portions not visible will be shown LOCATION APPROXIMATE

ROUTE MARKERS

- National Forest, Well Maintained for Passenger Cars
- National Forest, Maintained for Passenger Cars
- National Forest, Not Maintained for Passenger Cars
- National Forest Trail

737.2	737.1	736.2
737.3	737.4	736.3
730.2	730.1	729.2

SLATER BUTTE, CALIF.
SLATER BUTTE CAMP - 19 QUADRANGLE
N4145-W121315/7.5

1980

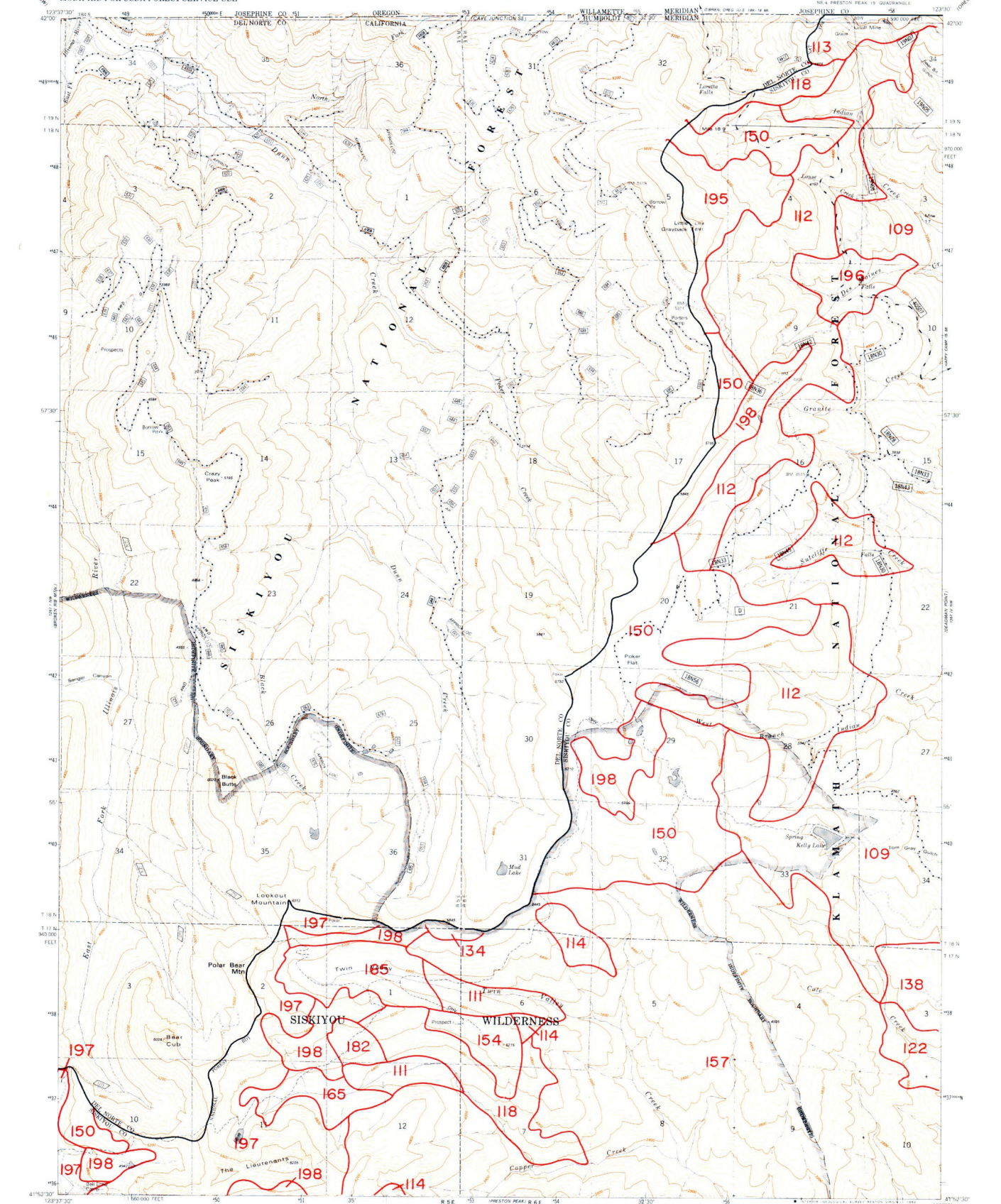
DMA 1367 IV SE-SERIES 1985

737-4

REVISED 1992

Klamath National Forest
Order 3 Soil Survey
1982

POLAR BEAR MTN. QUADRANGLE
CALIFORNIA-OREGON
7.5 MINUTE SERIES (TOPOGRAPHIC)
N.E.A. PRESTON PEAK 19 QUADRANGLE



Base map prepared by the U.S. Geological Survey

Control by USGS, NGS, NOAA, and USFS

Topography by photogrammetric methods from aerial photographs

taken 1975-76. Field checked 1977. Map edited 1982

Projection and 10,000-foot grid ticks: California coordinate

system, zone 11 (Lambert conformal conic)

1000-meter Universal Transverse Mercator grid, zone 10

1982 North American Datum

To place on the projected North American Datum 1982

move the projection lines 21 meters north and

96 meters east as shown by dashed corner ticks

Modification to the USGS base map by the Geomorphics

Service Center from 1989 aerial photography and 1990

correction guides furnished by the Pacific Southwest Region

Landnet revised according to additional Forest Service evidence

TOWNSHIP AND SECTION LINE CLASSIFICATION

- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Surveyed, Location Questionable
- Unsurveyed
- Locked Gate

CONTOUR INTERVAL: 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

- Primary Highway
- Secondary Highway
- Improved Road, Paved
- Improved Road, Gravel
- Unimproved Road, Native Surface
- Unimproved Road, Not Maintained for Passenger Cars
- Unimproved Road
- Trail

ROUTE MARKERS

- National Forest, Well Maintained for Passenger Cars
- National Forest, Maintained for Passenger Cars
- National Forest, Not Maintained for Passenger Cars
- National Forest Trail

755.3	755.4	754.3
738.2	738.1	737.2
738.3	738.4	737.3

POLAR BEAR MTN., CALIF.-OREG.

N41525-W12330/7.5

1982

100M 12871 NS - SERIES 7505

738-1

REVISED 1992

Klamath National Forest
Order 3 Soil Survey
1982

BROKEN RIB MTN. QUADRANGLE
CALIFORNIA-OREGON
7.5 MINUTE SERIES (TOPOGRAPHIC)
N 1/4 PRESTON PEAK 13 QUADRANGLE



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial photographs taken 1975. Field checked 1982. Map edited 1982
Projection California coordinate system, zone 1 (Lambert conformal conic)
10,000 foot grid ticks based on California coordinate system, zone 1 and Oregon coordinate system, south zone
1000-meter Universal Transverse Mercator grid, zone 10 1983 North American Datum
To place on the predicted North American Datum 1983 move the projection lines 21 miles north and 86 meters east as shown by dashed corner ticks
Modification to USGS base map by the USDA Forest Service Geomatics Service Center from 1988-89 aerial photography and 1990 correction guides furnished by the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence

Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial photographs taken 1975. Field checked 1982. Map edited 1982
Projection California coordinate system, zone 1 (Lambert conformal conic)
10,000 foot grid ticks based on California coordinate system, zone 1 and Oregon coordinate system, south zone
1000-meter Universal Transverse Mercator grid, zone 10 1983 North American Datum
To place on the predicted North American Datum 1983 move the projection lines 21 miles north and 86 meters east as shown by dashed corner ticks
Modification to USGS base map by the USDA Forest Service Geomatics Service Center from 1988-89 aerial photography and 1990 correction guides furnished by the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence

Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial photographs taken 1975. Field checked 1982. Map edited 1982
Projection California coordinate system, zone 1 (Lambert conformal conic)
10,000 foot grid ticks based on California coordinate system, zone 1 and Oregon coordinate system, south zone
1000-meter Universal Transverse Mercator grid, zone 10 1983 North American Datum
To place on the predicted North American Datum 1983 move the projection lines 21 miles north and 86 meters east as shown by dashed corner ticks
Modification to USGS base map by the USDA Forest Service Geomatics Service Center from 1988-89 aerial photography and 1990 correction guides furnished by the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence

Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial photographs taken 1975. Field checked 1982. Map edited 1982
Projection California coordinate system, zone 1 (Lambert conformal conic)
10,000 foot grid ticks based on California coordinate system, zone 1 and Oregon coordinate system, south zone
1000-meter Universal Transverse Mercator grid, zone 10 1983 North American Datum
To place on the predicted North American Datum 1983 move the projection lines 21 miles north and 86 meters east as shown by dashed corner ticks
Modification to USGS base map by the USDA Forest Service Geomatics Service Center from 1988-89 aerial photography and 1990 correction guides furnished by the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence

Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial photographs taken 1975. Field checked 1982. Map edited 1982
Projection California coordinate system, zone 1 (Lambert conformal conic)
10,000 foot grid ticks based on California coordinate system, zone 1 and Oregon coordinate system, south zone
1000-meter Universal Transverse Mercator grid, zone 10 1983 North American Datum
To place on the predicted North American Datum 1983 move the projection lines 21 miles north and 86 meters east as shown by dashed corner ticks
Modification to USGS base map by the USDA Forest Service Geomatics Service Center from 1988-89 aerial photography and 1990 correction guides furnished by the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence

CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

TOWNSHIP AND SECTION LINE CLASSIFICATION
Surveyed Location Boundary
Surveyed Location Approximate
Surveyed Location Questionable
Unsurveyed Projection

Primary Highway
Secondary Highway
Improved Road, Paved
Improved Road, Gravel
Improved Road, Dirt
Unimproved Road, Dirt
Trail
Locked Gate

Interstate Highway
U.S. Highway
State Highway
County Road
Primary Forest Route
Forest Road
Forest Trail

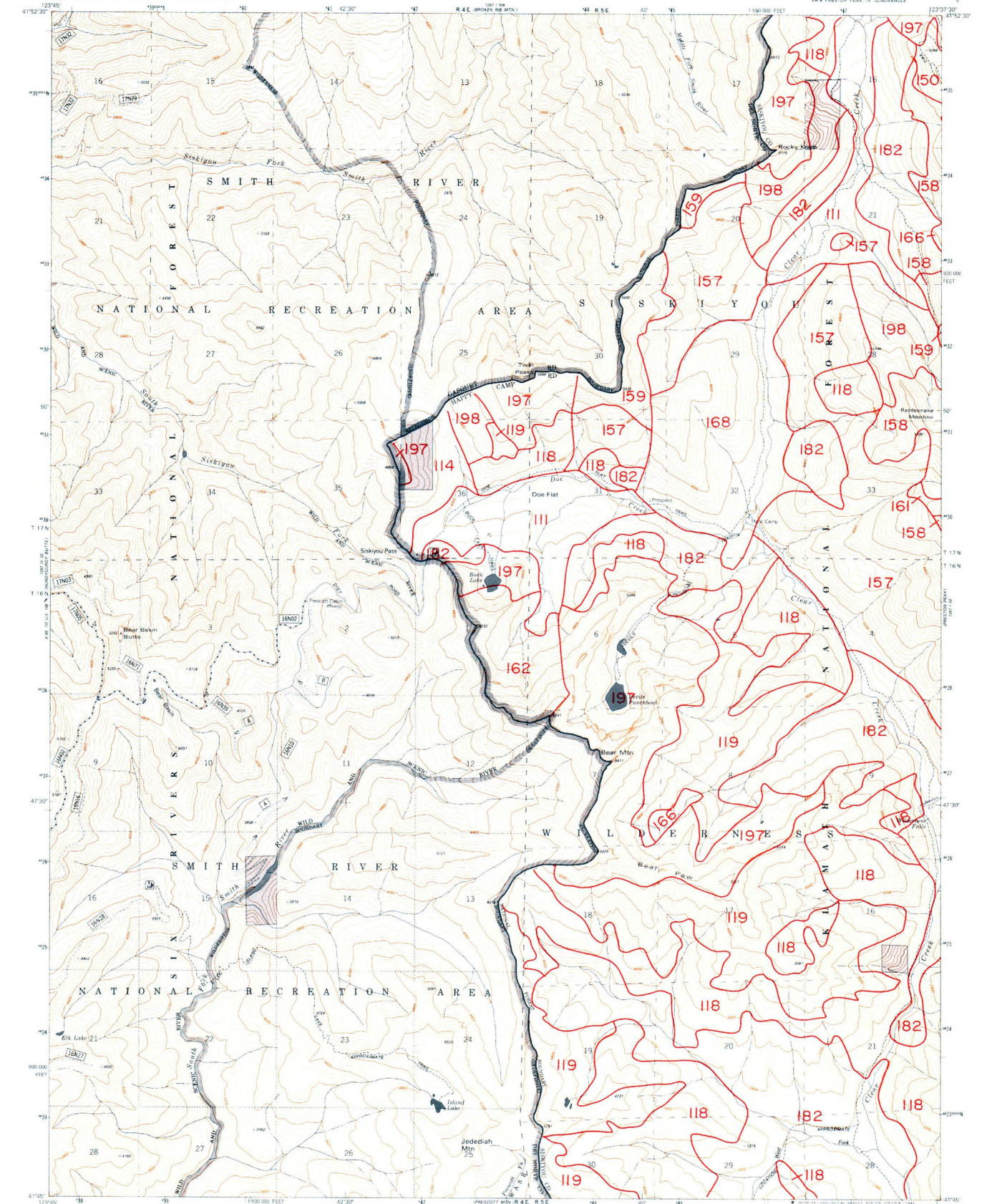
ATTN: Road ticks indicate change between portions
photos identified and portions not visible on the aerial photography
Portions not visible will be labeled LOCATION APPROXIMATE

BROKEN RIB MTN., CALIF-OREG.
N4152.5-W12337.5/7.5
1982
DMA 1267 1 NW-SERIES V985
REVISED 1990

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

DEVILS PUNCHBOWL QUADRANGLE
7.5 MINUTE SERIES (TOPOGRAPHIC)
SIXA PRESTON PEAK 19 QUADRANGLE



Base map prepared by the U.S. Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial photographs
taken 1975. Field checked 1977. Map edited 1981
Projection and 10,000-foot grid ticks. California coordinate
system, zone 1 (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid, zone 10
1927 North American Datum
To place on the predicted North American Datum 1983
move the projection lines 21 meters north and
96 meters east as shown by dashed corner ticks
Modification to USGS base map by the USDA Forest Service
Geomatics Service Center from 1988-89 aerial photography and
1990 correction guides furnished by the Pacific Southwest Region
Landnet revised according to additional Forest Service evidence

TOWNSHIP AND SECTION LINE CLASSIFICATION
Surveyed, Location Reliable
Surveyed, Location Approximate
Surveyed, Location Questionable
Unsurveyed, Projection

CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
Primary Highway
Secondary Highway
Improved Road, Paved
Improved Road, Gravel
Improved Road, Dirt
Unimproved Road, Dirt
Trail
Locket Gate

Interstate Highway
U.S. Highway
State Highway
County Road
Primary Forest Road
Forest Road
Forest Trail

DEVILS PUNCHBOWL, CALIF.
SIXA PRESTON PEAK 19 QUADRANGLE
N4145-W12337 5/7.5

1981

738-3C
REVISED 1990

ATTN: Road ticks indicate change between portions
photo identified and portions not visible on the aerial photography
Portions not visible will be labeled LOCATION APPROXIMATE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CLASSIFIED FOR USDA FOREST SERVICE USE

Topography by photogrammetric methods from aerial photographs taken 1975. Field checked 1977. Map edited 1982. Projection and 10,000-foot grid ticks: California coordinate system, zone 1 (Lambert conformal conic) 1000-meter Universal Transverse Mercator grid, zone 10 1927 North American Datum. To place on the predicted North American Datum 1983 move the projection lines 20 meters north and 96 meters east as shown by dashed corner ticks.

Modification to the USGS base map by the Geomatics Service Center from 1989 aerial photography and 1990 correction guides furnished by the Pacific Southwest Region

Landnet revised according to additional Forest Service evidence

	Surveyed, Location Reliable
	Surveyed, Location Approximate
	Surveyed, Location Questionable

***** Unsurveyed

CONTOUR INTERVAL 80 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

———— Primary Highway

 Secondary Highway
 Improved Road, Paved

----- Improved Road, Gravel

Unimproved Road, Native Surface
(includes 4WD/not maintained for
passenger cars)

..... Unimproved Road

Trail

ATTN: Road ticks indicate change between portions
photo-identified and portions not visible on the aerial photo
Portions not visible will be labeled "LOCATION APPROXIMATE"

For points that require more than one location, the location with the highest number of points will be used.

ROUTE MARKER

 National For Passengers

NY National For
for Passeng

National For
for Business

442 National For

PRESTON PEAK, CALIF.

N4145-W12330/7.5

1982

DMA 1267 I SE—SERIES V895

738-4

REVISED 1992

738-4

REVISÉ 1992

Klamath National Forest Order 3 Soil Survey 1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

MT. ASHLAND QUADRANGLE
OREGON
7.5 MINUTE SERIES (TOPOGRAPHIC)



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN 1974
FIELD CHECKED 1978 MAP EDITED 1980
PROJECTION LAMBERT CONFORMAL CONIC
GRID LONG-METER UNIVERSAL TRANSVERSE MERCATOR ZONE 18
36000-FOOT STATE GRID TICS OREG. S. ZONE & CALIF. ZONE 1

VERTICAL DATUM, NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM, 1983 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
(18 meters north 18 meters east)

Modification to the USGS provisional base map by the
Geometrica Service Center from 1989 aerial
photography and 1990 correction guides furnished by
the Pacific Southwest Region

Landnet revised according to additional Forest Service
evidence

UTM GRID AND 1983
MAGNETIC NORTH
DECLINATION AT
CENTER OF SHEET

TOWNSHIP AND SECTION LINE CLASSIFICATION

- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Surveyed, Location Questionable
- Unsurveyed
- Locked Gate

CONTOUR INTERVAL 40 FEET

- National Forest Boundary
- Non-National Forest System Land as of 1992
- Primary Highway
- Secondary Highway
- Improved Road, Paved
- Improved Road, Gravel
- Unimproved Road, Native Surface (includes 4WD not maintained for passenger cars)
- Unimproved Road
- Trail

ROUTE MARKERS

- National Forest, Well Maintained for Passenger Cars
- National Forest, Maintained for Passenger Cars
- National Forest, Not Maintained for Passenger Cars
- National Forest Trail

751.1 751.2 751.3
751.4 751.5 751.6
751.7 751.8 751.9

MT. ASHLAND, OREG.
PROVISIONAL EDITION 1983
N4200-W12237.5/7.5
751.3

REVISED 1992

ATTN: Road ticks indicate change between portions
photo identified and portions not visible on the aerial photography
Portions not visible will be labeled LOCATION APPROXIMATE

Klamath National Forest
Order 3 Soil Survey
1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
MODIFIED FOR USDA FOREST SERVICE USE

SISKIYOU PEAK QUADRANGLE
OREGON—CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)



PROVISIONAL BASE MAP PREPARED BY THE U.S. GEOLOGICAL SURVEY
CONTROL BY 1982 NORTH AMERICAN DATUM
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN 1983
FIELD CHECKED 1984 MAP EDITED 1985
PROJECTION UTM ZONE 18N
GRID 100-METER UNIVERSAL TRANSVERSE MERCATOR ZONE 18
BURNING STATE GRID TICS - OREG. 5-ZONE & CALIF. ZONE 1

VERTICAL DATUM: NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM: 1982 NORTH AMERICAN DATUM
To place on the predicted North American Datum of 1983,
move the projection lines as shown by dashed corner ticks
(20 meters north 95 meters east)

Modification to the USGS provisional base map by the
Geomatics Service Center from 1989 aerial
photography and 1990 correction guides furnished by
the Pacific Southwest Region

Land use revised according to additional Forest Service
evidence

Legend

- National Forest Boundary
- Non-National Forest System Land
- TOWNSHIP AND SECTION LINE CLASSIFICATION
- Surveyed, Location Reliable
- Surveyed, Location Approximate
- Surveyed, Location Questionable
- Unsurveyed
- Locked Gate

CONTOUR INTERVAL 40 FEET

- Primary Highway
- Secondary Highway
- Improved Road, Paved
- Improved Road, Gravel
- Unimproved Road, Native Surface
- Unimproved Road
- Trail

ATTN: Road ticks indicate change between portions
photo-identified and portions not visible on the aerial photography
Portions not visible will be labeled LOCATION APPROXIMATE

ROUTE MARKERS

- National Forest, Well Maintained for Passenger Cars
- National Forest, Maintained for Passenger Cars
- National Forest, Not Maintained for Passenger Cars
- National Forest Trail

SISKIYOU PEAK, OREG.—CALIF.
PROVISIONAL EDITION 1983
N4200-W12245/7.5
752-4
REVISED 1992